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Editorial

TRUTH ABOUT TYPHOID AND THE DRAINAGE CANAL

During the last twenty years successive health commissioners have asserted that the Chicago drainage canal, by diverting the flow of sewage from the source of public water supply, was the agency chiefly responsible for "pushing typhoid fever to the vanishing point in the City of Chicago."

Now, however, comes one of our distinguished ex-health commissioners, whose ability in handling figures is startling to say the least, with some statements that tend to cast doubt on the drainage canal as a factor in typhoid elimination. If permitted to stand unchallenged, these statements may prove a source of embarrassment in the current effort to protect Chicago's water supply. Under existing circumstances we feel compelled to give our readers some official statistics, compiled from public records and with very brief comment will leave the matter to individual judgment.

Before discussing the statistical data herewith presented it should be understood that sound statistical practice requires that data relating to diseases subject to epidemic prevalence, when employed for purposes of comparison, must be based on figures for periods of years,—usually ten-year periods,—in order that epidemic influences may be equalized and improper deductions minimized. Any comparison of morbidity or mortality data, year for year, may be and frequently is misleading.

Some of the statements reported to have been made and which are subject to correction or amplification are as follows:

1. "Typhoid was steadily diminishing prior to the opening of the drainage canal."

The official records fail to support this statement when put to the test of sound statistical

practice. *Increased typhoid death rates were the rule for the three ten-year periods prior to the opening of the dainage canal in 1900* to-wit:

Typhoid death rates per 100,000 of population for three 10-year periods prior to opening drainage canal.

10-year Periods	Typhoid Death Rate
1870-1879	62.2
1880-1889	62.9
1890-1899	66.8

2. "The drainage canal was opened in 1900, but there were more deaths from typhoid in 1901 and 1902 than in 1900, nevertheless."

This statement is correct so far as it goes, *but it doesn't go far enough.* It is a fine example of how statistical data may be improperly or unscientifically employed when one desires to make a certain point.

In the first place, it should have been explained, in all fairness to the intelligence of the assembly addressed, that although the drainage canal was opened January 2, 1900, it was not in full operation and did not even partially achieve its purpose until 1908, eight years after its opening. At this later date, more of the intercepting sewer systems were placed in operation *and then, and not until then, was Chicago's sewage wholly diverted from the source of its water supply. In other words, the drainage canal was only partially functioning during the period 1900-1908, and it was not until 1908 that it was approximately serving the purpose for which it was constructed, viz: diverting the city's sewage from Lake Michigan, the source of water supply.*

In the second place, this comparison of death rates from an epidemic disease, one year with another, with sources of infection only partially removed, is not in accord with sound statistical or scientific practice.

The public impression which naturally arises from such incomplete or incorrect statements is that the drainage canal has been a negligible factor in the reduction of typhoid fever and that the dangers now threatening Chicago from stoppage of full functioning of the drainage canal are more imaginary than real.

Let us see what the official records show:

TYPHOID DEATH RATES; 10-YEAR PERIODS

Before and After Opening of Drainage Canal

10-yr. Periods	Death Rates per 100,000 population	Points Reduction Or Increase over Preceding 10-yr. Period
1870-1879	62.2	....
1880-1889	62.9	+0.7
1890-1899	66.8	+3.9
1900-1909	22.7	—44.1 (a)
1910-1919	6.4	—16.3 (b)
1920-1924 (5 yr.)	1.3	—1.6 (c)

(a) Drainage canal opened January, 1900. Intercepting sewers completed, 1908.

(b) Pasteurization of milk begun 1910 (about 50% of supply pasteurized by 1912.) Chlorination of water supply partially done 1912-16. All water chlorinated after December, 1916.

(c) Comparing last two 5-year periods.

In the ten-year period following opening of the drainage canal the typhoid death rate (per 100,000 of population) dropped 44.1 points, notwithstanding the fact that a large part of Chicago's sewage was deposited in the lake until 1908. The reduction in the following decade was 16.3 points and there is abundant reason to believe that a large part of this reduction was due to further improvement in the water supply brought about by opening of the intercepting sewers in 1908.

There are, of course, other factors contributing to the reductions since 1910, viz: pasteurization of about 50 per cent of the milk supply, begun in 1910, and chlorination of the water supply partially done during the period 1912-16 and wholly done since December, 1916.

It is obvious, too, that neither pasteurization of milk supplies nor chlorination of water supply had anything whatever to do with the great reductions noted in the typhoid rates in the decade 1900-1909. That reduction is due almost wholly to a purer water supply.

If Chicago is compelled to throw its sewage into the lake prior to the completion of sewage treatment plants and water filtration plants, it may expect a repetition of its former sad experiences.

Insufficient flow in the Chicago River towards the dainage canal means sewage flow to the lake.

Somehow, we have a feeling that it is vastly more important to conserve human health and life than it is to promote navigation and water power. The saving of one life outweighs all commercial considerations. Those who think and act otherwise should be put squarely on record and held to account.

MILK, THE FOOD, OR MILK, THE POISON, WHICH? WHAT KIND OF MILK DO YOU AND YOUR FAMILY DRINK?

Knowledge of the dual nature of milk, though increasing slowly, is responsible for the growth and popularity of certified milk as food for babies, invalids and the aged.

During the last thirty years, in Chicago alone, the daily sales of certified milk have increased from one quart to 15,000 quarts.

The Dr. Jekyll-Mr. Hyde nature of milk depends upon the questions of cleanliness and bacteria content. Though milk from cows or goats, and in some countries, asses, is the agreed "Mother's food that lasts through life," interesting and rather staggering figures reveal beyond dispute that only too often milk is not what it ought to be.

In company with fire, water, electricity and other powerful primitives, milk shares both protective and destructive qualities. Impure or bad milk is as lethal as an overdose or misuse of arsenic, strychnine, mercury or the deadly alkalis or acids.

Only too often the foaming glass of creamy milk, rich enough to the palate, clear enough to the eye is a beaker of concentrated plague juice.

Milk, to a degree is made safe by pasteurization, provided the subsequent handling and delivery conform to the rigid laws of cleanliness. Dirt breeds bacteria and milk feeds harmful bacteria as faithfully as it nourishes succoring cells.

To begin with milk should be kept clean at the start in so far as possible, and secured only from clean herds and clean environment.

Certified milk is that kind of milk. Certified milk is drawn in clean sheds by clean and healthy milkers from clean and healthy cows. It is clean, healthy *raw* milk, and approaches as nearly to being the perfect substitute for mother's milk as science has been able to provide for infants, deprived for one of many reasons of their natural food supply. Even when certified milk has to be modified for the stomachic demands of unusual or ailing infants, this same certified milk is far and away the best basis for such modification. It has the vitamines, the living cells.

Up until a few short years ago it was practically impossible, and at the best always difficult to secure anywhere clean, raw milk, produced under such sanitary conditions as would make it safe for infants, or for a long line of complicated invalids. As a consequence, with the cooperation of the medical profession and under the direction thereof, certified milk dairies have been established.

Owners of certified milk dairies have had a long and bitter struggle to bring their products up to the present standard.

The task involves constant farm inspections. These inspections cover herds, employes and equipment. To further insure the maintenance of certified milk quality, there are daily tests by the Medical Milk Commission and by the local health department.

As a result of this extreme care, there results a low bacteria count. An invaluable asset this for invalids as well as infants with whom food dependence must be placed upon milk. Such individuals are without the resistance necessary to fight bacteria of a harmful sort.

Many authorities recommend that certified milk shall be given a child at least during the first year and a half of its life, but longer if possible.

For children and for the sick especially, the most exceptional food values should be considered. Under any conditions there is more real food content and dietetic value in a quart of milk than in any similar quantity of any other food. To quibble as to price in this instance is to be pennywise and pound foolish.

Pasteurized milk costs more to handle than does dirty milk. Certified milk costs more than either, but it is really milk with an insurance rider attached—a clause insuring health and nourishment.

In this connection it must be noted again that no matter how clean milk may be at the start, unless care is constant it may be contaminated following delivery to the dealer or even in the home. Sometimes a false sense of security leads to an abrogation of further precaution.

Milk can become contaminated as quickly as ice can melt in the sun. The purer the milk to begin with, the quicker the sullying can be made.

Purity in production is wasted by defiling aftercare.

Of paramount importance is the care of milk in dispensing stations and in the home. If certified milk is left open in the home where dust and dirt can get into it, then it might almost as well never have been certified milk to begin

with. All the money, energy and care bestowed upon the production of certified milk is wasted, literally thrown away if this passion for purity and cleanliness does not follow the milk until the last drop is used as food. And this same statement maintains upon the useful pasteurized milk. It can never attain the heights of the perfect food that certified milk boasts, nor replace pure raw milk, and pasteurized milk is a mere makeshift between dirty milk that is raw poison and certified milk, the perfect food. Pasteurization kills bacteria but does not remove dirt.

Numerous certified milk farms supply Chicago. These have been visited frequently during the past few months by groups of Chicago physicians, and these inspections will be continued during the spring and summer.

There is not as much difference between odoriferous chlorinated lake water and icy-cold and sparklingly pure tested natural spring water as there is between pasteurized and certified milks. It is worth the while of every milk buyer to know the truth about milk, and its current, scientific production. Whether milk is used for ill-nourished adults or for helpless infants, whether the choice of the housewife or the prescription of the physician, the variations in this useful food are such that all its possibilities both good and bad should be made a matter of common knowledge. The American Milk Commission maintains local representatives throughout territories where certified milk is produced. From these representatives information is available both for the profession and for the laity.

The milk question is a health question. Often the milk used or the lack of it swings the balance between health and disease, or between life and death. The dairy farmer who sets forth an impeccable product is the right hand man for the physician and the dietician.

NATIONAL BABY CONGRESS AND HEALTH EXPOSITION

Report on Progress

The Committee of the Council of the Illinois State Medical Society is pleased to report that substantial progress has been made in the plans for society sponsorship and supervision of the forthcoming National Baby Congress and Health Exposition to be presented in the American Exposition Palace, Chicago, May 2nd to 9th, inclusive, 1925.

The presidents, presidents-elect and secretaries of the American Medical Association, the Illinois State Medical Society and the Chicago Medical Society have consented to act in an advisory capacity to the Committee of Medical Supervision. Members of the Medical Advisory Board are: Dr. William Allan Pusey, president; Dr. William D. Hagard, president-elect, and Dr. J. H. Walsh, secretary, Board of Trustees, American Medical Association; Dr. Louis C. Taylor, president; Dr. J. C. Krafft, president-elect and Dr. Harold M. Camp, secretary, Illinois State Medical Society; Dr. J. H. Walsh, president; Dr. Malcolm L. Harris, president-elect; Dr. R. R. Ferguson, secretary, Chicago Medical Society.

Among the important arrangements proposed and accepted are the following:

1. The objects of this exposition shall be to furnish the public thoroughly dependable information and guidance in all matters relating to the health, physical and mental upbuilding, comfort, safety and general betterment of our people.

2. This exposition is NOT FOR PROFIT, that any surplus over and above legitimate expenses shall be returned pro rata to those exhibitors contributing financial support by purchase of exhibit space.

3. This exposition shall not be for exploitation of any individual or group and shall not have any private promotional or political aspects.

4. No exhibit, article, demonstration or thing shall be admitted to or permitted in this exposition which does not conform to the ethical and scientific standards of the American Medical Association and the Illinois State Medical Society, and that the Committee of the Council of the Illinois State Medical Society shall have sole and final determination in all such matters.

5. No financial or legal obligations, promotional or otherwise, shall be imposed upon the Illinois State Medical Society, its representatives, individually or collectively, on account of this exposition.

6. All organizations, firms, corporations or individuals, commercial or educational, contributing to individual and community health, child welfare, public safety, physical comfort and betterment may be admitted to this exposition; provided that they meet with approval and agree to conform to the rules and regulations of the Medical Committee of Supervision of the Council of the Illinois State Medical Society.

7. Certificates of Merit may be awarded to exhibitors; Provided that their products or works conform to the ethical and scientific standards of the American Medical Association, the Illinois State Medical Society and to the requirements of law and of governmental agencies, and Provided further, that these certificates may be recalled or revoked at any time that the Committee of Supervision of the Illinois State Medical Society may determine, after proper hearing, that such action is warranted and by them approved.

The Committee of Medical Supervision, appointed by the Council of the Illinois State Medical Society, shall have sole and full authority to make and enforce rules and regulations affecting Certificates of Merit.

PRELIMINARY WORK WELL ADVANCED

The Medical Committee has kept in close touch with the development work which up to this time has related chiefly to interesting reputable business concerns in taking space for exhibit purposes. The support thus far developed is very encouraging.

Many of our most successful business men have not failed to recognize that the American Public has developed a new sense—"health sense"—and that there is an ever increasing demand for those things which actually contribute to personal health and physical efficiency. There is, therefore, an increasing appreciation of the fact that it pays to advertise the health merits of commercial products and that when this advertising can be done under proper auspices such as is afforded by the National Baby Congress and Health Exposition, very material business advantages are obtained.

Then again, we find that many of our leading business men are interested in and ready to support this exposition, not from consideration of immediate financial return but rather from a desire to encourage a real health educational movement and in this way render important public service.

When it is realized that the business interests of Illinois lose more than $60,000,000 every year from preventable illness of employes and that proper popular health education is the surest way to reduce this loss, it can be readily understood that the National Baby Congress and Health Exposition, a great health educational enterprise, is an event of considerable importance to the business world, worthy of its best support.

THE EDUCATIONAL EXHIBITS

With the necessary preliminary work disposed of the Medical Committee will now devote its chief attentions to the development of the strictly educational exhibits.

All agencies, governmental and extra-governmental, whose activities in any way relate to public or individual health, child welfare, physical upbuilding, professional education (medical, nursing, dental and pharmaceutical) are cordially invited to file their applications for exhibit or demonstration space at once. Communications should be addressed to Dr. R. R. Ferguson, Chairman, Medical Committee of Supervision, National Baby Congress and Health Exposition, care American Exposition Palace, 666 Lake Shore Drive, Chicago.

The professional forces required for operation of the several important demonstrations, such as Baby Health Conference, the Health Youth Contest, and the various other examination features, will be drawn from the several professions, medical, dental and nursing, in all parts of the state. Invitation is extended to State and County Societies to actively participate.

REQUEST TO COUNTY SOCIETIES

County Medical Societies throughout Illinois are requested to immediately appoint a representative from each county society to serve with the General Medical Committee in the conduct of this exposition. It will be appreciated if the county secretaries will advise Dr. R. R. Ferguson of the local member so appointed, at the earliest date.

THERE SHOULD BE NO SIDE DOOR SHORT CUTS TO THE PRACTICE OF MEDICINE

We Are the Victims of a Paternalistic Regime That Will Eventually Enslave and Bankrupt the Country

We have too many laws, and too large a tax levy.

Living expense and taxes will be lowered as soon as hundreds of overpriced, interfering, recently adopted and unnecessary laws are done away with. America is mortally ill from a plague of laws. This evil is maintained at an annual cost per capita of $91, and of about $350 per family. One out of every twelve people in the United States, who are over sixteen years of age, and who are gainfully employed, is on the public payroll. In the last few years this ratio has risen from one out of every 1,000. There are 15,000,000 employees on the public payroll according to the estimates of census statisticians. This places an officeholder or "tax-consumer" on the backs of every two tax-producers. Exclusive of pensioners there are almost three million public servants whose pay comes from the ever increasing taxes. A large proportion of this number is engaged in the administration and execution of superfluous statutes.

A similar situation crushed France and produced the French revolution. It was the bane and damnation of Germany.

"Americans are now compelled by law to do, and prohibited by law from doing, more things than were the citizens in autocratic Europe before the war."

We are the victims of a paternalistic regime that will eventually enslave and bankrupt the country. The cost of *government* has become unbearable. Too many functions of local and of state governments are being controlled by hidden bureaus in Washington. There is more power exercised today in these bureaus by unknown "experts," political appointees of whispering propaganda, than by the courts themselves.

Centralization of government, bureaucracy, state subsidies and autocratic control are a poignant menace, and a fatal growth.

Bureaucracy is a curse wherever inaugurated. In the management of medical affairs it is fatal. Germany stood at the pinnacle of medical achievement thirty years ago. Under bureaucratically administered state medicine, Germany has come to have the worst medical service in the world and the poorest care for the health of the people. It will be ruinous to the health and welfare of the United States if this system is adopted in this country.

No doubt before the present legislature will be presented many bills, attempting to regulate incompetently the practice of medicine and needlessly to increase taxation. Many of these bills will provide for the licensing to practice medicine, of uneducated and improperly equipped men and women.

We ask no especial favors for doctors, but we believe in a single standard of education and a thorough professional training before a man or woman can be licensed to practice the healing art or to diagnose disease.

Persons who seek a license to treat human ailment in the State of Illinois should know how to make a diagnosis of disease which is essential for the conservation of the public health.

There should be no side door short cuts to the practice of the treatment of disease in this State.

THE CHILD LABOR AMENDMENT FROM A REAL AMERICAN VIEWPOINT

Resolution Adopted by the Board of Directors of the Hamilton Club of Chicago, January 26, 1925

Whereas, The Proposed Child Labor Amendment provides "That Congress shall have the power to limit, regulate and prohibit the labor of persons under eighteen years of age," and

Whereas, Such an amendment would vest in Congress the right to standardize employment and education of children and give the Federal Government the power to prohibit or limit to any degree that it might see fit, the care, culture, education and employment of children, and in effect, to nationalize all children under eighteen years of age, and

Whereas, It is the experience of the American people that Congress fully exercises all powers vested in it by the Constitution, and at times attempts even to go beyond such powers, and

Whereas, The use of the catchy expression,

"Child Labor" amendment, and the humanitarian features connected therewith, have served to create sentiment and excite the sympathy of certain social welfare groups, and other well disposed people, who have thus unwittingly permitted themselves to be used by the enemies of the Government to aid and abet the passage of this bad measure, and

WHEREAS, Forty-six out of forty-eight states of the Union now have child labor laws which, with only a few exceptions, are being satisfactorily enforced, and

WHEREAS, The exploitation of child labor has been greatly minimized within the United States, in recent years, and

WHEREAS, The chief argument of the proponents of the measure is that all the states have not succeeded in correcting all the abuses against children, and

WHEREAS, The same reasoning would require the Federal Government to take over the administration of the entire Criminal Code, because of the fact that murder, robbery, arson and other crimes have not been entirely eliminated by the State Governments and the local authorities, and

WHEREAS, The Supreme Courts have always upheld proper and just legislation concerning child labor in the various states, and

WHEREAS, The states, in which plenary police power resides, have, for the most part, been diligent and progressive in regulating the employment of children, and

WHEREAS, The proposal to take away from the states and confer on the National Government those rights and powers specifically reserved to the states in the Constitution would be revolutionary and would change the principles on which the Government is founded, and

WHEREAS, All persons of socialistic, communistic and bolshevistic tendencies are strongly in favor of ratification of said amendment by the states, and

WHEREAS, On September 1, 1916, Congress passed a child labor law, intended to prevent transportation in interstate commerce of the products of children's toil, and the Supreme Court, June 3, 1918, held the law unconstitutional on the ground that the power of Congress to regulate interstate commerce could not be used that way. Five of the justices so held; four dissented, and

WHEREAS, February 24, 1919, Congress passed another child labor law and this time Congress attempted to put a special tax on those mills, mines and quarries that employed children, and the Supreme Court, May 15, 1922, held that this was an improper use by Congress of the taxing power, and

WHEREAS, An amendment was submitted and passed through Congress, June 2 of this year, reading as follows:

"Section 1. The Congress shall have power to limit, regulate and prohibit the labor of persons under eighteen years of age.

"Section 2. The power of the several states is unimpaired by this article except that the operation of state laws shall be suspended to the extent necessary to give effect to legislation enacted by the Congress," and

WHEREAS, Thirty-six states already prohibit the employment of children under fourteen years of age—even in vacation periods, and

WHEREAS, Six states already prohibit the employment of children up to fifteen years of age, and

WHEREAS, Two states, Ohio and Montana, prohibit the employment of children up to sixteen years of age, and

WHEREAS, Such a Federal amendment would cripple the economic independence of poor but self respecting families and clothe Congress with power to cross state lines and invade the privacy of the home—and regulate the intimate details of family life—something never intended by the authors of the Constitution, and

WHEREAS, Such an amendment would impose idleness on a large percentage of our self supporting population and those having others dependent upon them, and would render them potential criminals, and

WHEREAS, It would abrogate state Constitutions and suspend state laws whenever they conflict with any freak legislation with relation to employment any future Congress might enact, and

WHEREAS, It would establish abitrary rules and regulations, applicable alike to all persons under eighteen years of age, irrespective of whether married or single, and regardless of the varying industrial, occupational and agri-

cultural conditions, and the diversity of schools and education advantages, and

WHEREAS, No actual necessity exists for such an amendment; it has not been shown that state legislatures are ineffective or unable to protect the rights of children; the care, nurture and control of children are properly first under the parents, then the local authorities, then the states and lastly the Federal Government, and

WHEREAS, It is a further attempt toward centralization of all power in the Federal Government. It would create countless bureaus, an army of office holders and regulators to inquire into and spy upon the family life of our citizens and create a bureaucracy of the most dangerous and hateful character, at an increased expense that would impose an intolerable burden upon the taxpayers, and

WHEREAS, Such an amendment would shatter our ideal of Republican, representative government and overturn our well settled and well defined conception of the relation of the citizens to the state and the state to the Federal Government, and

WHEREAS, It is an insidious encroachment upon the rights, and a surrender of the liberties of the people, and is the entering wedge for the establishment of a paternalistic central government.

Now, THEREFORE, *BE IT RESOLVED:* That, we, the Board of Directors of the Hamilton Club of Chicago, for the forgoing reasons are unalterably opposed to the so-called child labor amendment, and we hereby pledge ourselves to use every honorable effort to educate the people up to the dangers that lurk therein and to prevent its ratification by three-fourths of the states, and to accomplish its defeat.

THE CHILD BELONGS TO THE STATE.—BOLSHEVISM, COMMUNISM AND THE CHILD LABOR AMENDMENT

NOTE: Much has been said recently of the revolutionary element backing the Child Labor Amendment. That it is sponsored and supported by every red and communist in the United States is not questioned by people who have made a study of the subject. As confirmatory of the above statement we quote below an editorial from the January, 1925, issue of the *Workers Monthly*, same being a consolidation of the *Labor Herald*, *Liberator* and *Soviet Russia Pictorial*.

This issue contains an article by William Z. Foster, also an article lauding Lenin, the leader and comrade. The front page portrays the red flag of Russia. In our opinion it represents the reddest of the reds. The following is the editorial:

FIGHT AGAINST CHILD LABOR

Every militant and progressive unionist, *and every revolutionary worker*, will join in the demand for the ratification of the child-labor amendment to the constitution. But there should be no illusions about this amendment. It will not protect the children of the workers. In the first place, it only gives power to Congress to pass legislation; it remains for such legislation to be forced through the legislative bodies by the pressure of working-class demands. Secondly, the prohibition of child labor, unless it is accompanied by *governmental maintenance* of the children, is absolutely ineffective.

It is only when the working class has itself taken over the political power, when the capitalist dictatorship has been overthrown by the dictatorship of the working class, that child labor and other evils afflicting the toiling masses can be abolished. What will happen under a proletarian regime is strikingly illustrated by the story in this issue, by Anna Louise Strong, formerly of Seattle and now in Russia. Anna Louise Strong tells about the one spot on the globe where the life-problems of the working class are being solved in a comprehensive manner. *It is only when the workers of the United States have similar power to control, through their own government of workers' councils, the social and economic life of the country that child labor will cease its destructive work.*

When capitalism remains, legislation on the child labor question will only give such slight relief as the workers force through by their political and economic power, by demands and demonstrations. And such pressure upon the capitalist government, in order to have any effect whatever, must be given point and substance by demands for governmental *maintenance of all children of school age, such maintenance to be paid for by special taxes upon large incomes.* The rich, who appropriate the wealth produced by the working class must be made to disgorge a part of it for this purpose, as one of the first steps towards making them disgorge all their ill-gotten gains to make way for the new system of society, *wherein the working class will rule.*

ILLINOIS' DUTY IN MEDICAL EDUCATION

The prime object of the Medical Schools of Illinois should be to educate young men and women to become practitioners of medicine for the people of the State of Illinois.

It is understood that the control of the College of

Medicine of our University has fallen into the hands of non-medical men whose education and training have not taught them the art of medicine.

The training given and contemplated by these men has failed and will fail to graduate doctors willing to practice in the rural districts of the State.

Dr. Harvey Cushing, Professor of Surgery at Harvard University, quotes Leonardo as writing in his notebook, "The supreme misfortune is when theory outstrips performance," and says that Roland, the research physicist, when asked what he did with his undergraduate students, said, "I neglect them." Writing on medical education, Dr. Cushing says, "There was a time a generation ago when from the beginning of their course students came under the influence of teachers whose point of view was colored by the fact that they, at the same time, were engaged in the practice of their profession. We have now gotten away from that—gone back to the standard of the two-year course. This is excellent for the rare and superior students who look forward to a pure science career, but we may have a good many doubts about the advantage to the others, who represent 95 per cent of the class. Any modifications of our accepted curriculum will in the long run only be worth while if there are the right people to carry it through and if the principle is adhered to of having the more experienced clinical teachers the ones first to meet the students." (J. A. M. A., 82-841, Mar. 15, 1924.)

Dr. Frank Billings, Ex-President of the American Medical Association and Dean of Rush Medical College, of Chicago, says, "Specialism in the teaching of and the practice of medicine has been permitted to warp our judgment and to divert us from the proper course to pursue in the attempt to educated and train the student of medicine. There is not a sufficient number of efficiently trained general practitioners to meet the public need. Therefore the chief product of the medical school should be the graduation of resourceful, broadly educated and well trained practitioners of medicine." (Virginia Med. Monthly, Vol. 48, p. 40, Apr., 1921.)

Arthur Dean Bevan, Ex-President of the American Medical Association and Professor of Surgery of Rush Medical College, of Chicago, says, "The well qualified general practitioner can take care of 95 per cent of the patients in his community. The specific purpose of the undergraduate medical course is to train general practitioners properly." (J. A. M. A., Vol. 80, p. 1187, 4-28-23.)

J. A. Weatherspoon, Professor of Medicine of Vanderbilt University, Nashville, Tenn., says, "Our system of education is training men in such a way that they could not practice efficiently in the rural districts where they are most needed if they desire to do so. This is not only a menace to the people, but also threatens the system on which the blame falls. The clinician is the man, above all, who knows where the weak places in medicine are. He knows the real problems and if allowed to work jointly in the schools can be of untold service in directing the attention of research workers to fruitful fields. In 1904 there were enrolled in medical schools 28,142 students; in 1922, 16,140 (showing a decrease of 12,002.")

Dr. N. P. Caldwell, Secretary of the Council on Medical Education of the A. M. A., says, "It is true that a scarcity of physicians exists in the rural districts, and that this scarcity is becoming more pronounced is evident."

Dr. Lyman Wilbur, Ex-President of the American Medical Association and President of Stanford University, of California, says, "There has been by one process of another a limitation of medical students which has almost reached the danger line of providing too few trained and skillful men for the service of the public. Make the graduate a general practitioner, not an expert in any particular field." (Calif. State J. Med., Vol. 20-218, July, 1922.)

Dr. Louis B. Wilson, Director of Mayo Foundation, Rochester, Minn., says, "We are not yet ready to depart from the time-honored theory that the function of the undergraduate school is the preparation of general practitioners." (Southern Med. Jour., Vol. 17-707, Sept., 1924.)

William Allen Pusey, President of the American Medical Association, of Chicago, says, "The greatest problem of all is the old homely one of treating men that are sick or injured. Sickness and injury will inevitably remain the lot of man. As long as this is true, there will be need of the personal physician to take care of the individual patient. For this service thousands of physicians will be needed—these are the men on the firing line. The battle for the relief of suffering depends on them. To foster the competence of these men is the greatest social responsibility of medicine." (J. A. M. A., Vol. 83, No. 24, June 14, 1924.)

President Kinley of the University of Illinois, a few weeks ago met the students of the medical college, about 460 in all, and it is reported that he asked them how many intended to become general practitioners of medicine. Thirty raised their hands and one of the thirty answered, "We are all taught to eventually be specialists." The President then asked how many were reasonably well satisfied with the training they were getting at the college. *Less than thirty raised their hands.*

It is understood that the reason for this is that the idea has been so inculcated in the minds of the students that in order to practice medicine a doctor must have at his disposal, not only complete laboratory and hospital facilities, but also research facilities.

Eventually that vitally important group of citizens living in rural districts will succeed in demanding through the legislatures that they have well trained physicians from their State Medical School if they are to support that institution.

There is need of greater registration in the College of Medicine, since it is understood that about 100 desirable applicants were refused admission or put on the waiting list last year.

The removal of the first two years of medical education to Urbana would provide facilities for about

double the number of students in the third and fourth years.

It is understood that the first two years of medical education now being given in Chicago could be combined with the two years pre-medic work now being given at Urbana at much less expense to the taxpayers. Clinical research should be conducted in the clinical department of the medical college, in contradistinction to the fundamental department, by a medical man in each clinical department, who is trained in research work, and who is on full time salary and is assisted by fellow and hospital residents who are graduates of medicine, and the clinical staff should consist of and be directed by graduates in medicine, licensed to practice.

The University of Wisconsin, the University of North Dakota, the University of South Dakota, the University of Missouri, Dartmouth College, and others providing two years in medical education, have these two years given in connection with the academic department of the University and the University of Chicago, the University of Colorado, Tulane University, the Uuniversity of Oklahoma, and others providing four years in medical education, have the first two years of their medical work given in connection with the academic department of the university, and work of the third and fourth years is now being done by the clinical faculty, with practically no expense to the taxpayers.

It is understood that the cost at the present time, under non-medical management, of maintaining the work of the College of Medicine is exorbitant, and it has cost the taxyapers of the State during the fiscal year over $300,000 for the education of the students of the College of Medicine.

It is plain to be seen that the present system of medical education is not conducive to the training of the general physician as is needed by the average community. To receive such needed practical training the student must be in closer contact with the teaching, experience and personality of men actively engaged in the practice of medicine and its various branches. Clinical years of medical education should be the years of intensification of practical medicine as it is known by practical experience. To this end the teaching of medicine should be divided into fundamental and clinical courses as separate entities. The fundamental years of medicine are academic, and should be regarded as comparable to other academic courses of university instruction.

Hence the work of the first and second years of the College of Medicine should be moved to Urbana, which would liberate buildings and equipment in Chicago and which would permit of the handling of twice as large classes in the clinical branches. This would make the greatest possible use of the physical equipment in Chicago, to the end that the taxpayers would be saved a large sum of money which it is now necessary to expend in maintaining a pre-medic department in Urbana and a fundamental department in Chicago.

The present extravagance in the first two years should be curtailed and the medical department run on an economic basis, thereby saving the taxpayers of the State a large sum of money.

Also the curriculum of the College of Medicine should be so changed as to teach the students to become, first of all, general practitioners of medicine.

DON'T FORGET YOUR INCOME TAX—THE THE NEW PROVISIONS AND REGULATIONS AS THEY APPLY TO PHYSICIANS ARE SET FORTH BELOW

A sharp revision of the normal tax rate and a modification of the surtax and provision for an "earned income" reduction constitute the most important changes made in the federal income tax law, which was amended by Congress last Spring.

Returns must be made to the Collector of Internal Revenue of the district in which the individual affected resides before March 15, 1925.

Responsibility for making these returns is vested with the individual. Blank forms are mailed to all known persons who have previously made returns. Failure to receive such forms, however, will not be accepted as an excuse for failure to file within the time specified by the law.

Under regulations effective last year, all persons deriving incomes from a business or profession, or both, are required to file their return upon Form 1040 (the large form). The small form, or 1040A, is for persons who secure their incomes from wages, salaries or interest alone and where the gross amount is less than $5,000. The large form, or 1040, is also used by persons reporting an income of $5,000 or over, regardless of the nature of its source.

The large form, or 1040, has been mailed to all Illinois physicians by the Collectors of Internal Revenue. If such blank is not received, apply to the Collector of Internal Revenue of the district in which you reside.

NEW RATES

The Normal Tax Rates: First $4,000 in excess of credits, *two per cent.;* next $4,000, *four per cent.;* and the remainder of net income, *six per cent.*

The Surtax Rates: Surtax is computed upon net income before personal exemption dividends and taxable liberty bond interest is deducted. The surtax is not applicable to net incomes of less tran $10,000.00 and upon net income in excess of that amount, the tax is levied on a graduated scale. A partial list of surtax rates is shown below:

	Rate of Tax	Tax
Net incomes up to $10,000.00		None
In excess of $10,000.00 and not in excess of $14,000.00	1%	$ 40.00
In excess of $14,000.00 and not in excess of $16.000.00	2%	80.00
In excess of $16,000.00 and not in excess of $18,000.00	3%	140.00
In excess of $18,000.00 and not in excess of $20,000.00	4%	220.00

For example, a person having a net income of $11,500.00 will be required to pay a 1% surtax on that amount of income in excess of $10,000.00 or 1% on $1,500.00, a surtax of $15.00. A person whose net in-

come was $14,800.00 would compute his surtax as 1% on the first $4,000.00 in excess of $10,000.00 or $40.00 plus 2% on net income in excess of $14,000.00, that is 2% on $800.00, $16.00; a total of $56.00 surtax.

Liability to File. If married, a return should be filed if the net income was $2,500 or over. If single, a return should be filed if the net income was $1,000 or over. If the *Gross Income* was $5,000 or over, a return is required whether married or single, and regardless of the net amount left over after legitimate expenses are deducted.

Liability to file a return is contingent upon the amount of net income, and not upon a net income with personal exemptions deducted. In other words, if the net income was $1,000 or $2,500, single or married respectively, and personal exemptions reduce these amounts, individuals *will not be required* to pay a tax, but *must file a return.*

The Internal Revenue authorities consider a person married on December 31, 1924, as being eligible to the marital exemptions.

Personal Exemptions Allowed. If married and living with wife, or the head of a family for the entire year an exemption of $2,500 is permitted.

If single, and not the head of a family, the personal exemption is $1,000. An additional $400 for each person, other than husband or wife, dependent upon and receiving support from you, is allowed, provided the dependent is under 18 years of age, or incapable of support because of mental or physical condition.

In the case of a change in marital status during the year, the exemptions of $2,500 and $1,000 shall be prorated over the period of married and single state.

Office Rentals. If a physician pays rent to another person for office space, he is permitted to deduct the amount from his gross income. If he owns his home and maintains an office in it, he cannot claim a deduction for office rent.

Automobile. The cost of repair and upkeep of an automobile used in professional visits may be deducted. The salary of a chauffeur, if most of his time is spent in driving to professional calls, may also be deducted. Sums spent for taxi hire, car fares, etc., while on professional calls, may be deducted. The basic cost of a business automobile may be depreciated.

However, the excise, or "War Tax" paid on the purchase of a new automobile is not deductible, for the reason that this tax is assessed against the manufacturer, who passes it on to the purchaser as a part of the cost of the machine. The original cost of a business automobile, however, may be depreciated. To arrive at original cost of a business automobile take the list price of car, f. o. b. factory, which is the basis of deduction, but divided over a period of years. In other words, if the list price of an automobile is $2,000 and its estimated period of usefulness is five years, $400 or 20 per cent. of list price, f. o. b., may be deducted each year for 5 years.

Assistants. Deductions are permitted for the salary of a nurse, laboratory assistant, stenographer or clerical worker in the office so long as the duties of these are in connection with the physician's professional work. Wages paid to maids taking care of the office, answering the telephones are also deductible, as are any funds paid to employes for services rendered in connection with practice, or care and treatment of patients.

Medicines, Instruments, Supplies. Medicines used in the office to treat patients, bandaging, laboratory materials and all other supplies necessary to operate a physician's office may be deducted. Upon surgical instruments, one-fifth of the purchase price may be deducted annually for five years under depreciation account.

General Office Expense. Cost of all telephones used in the office is exempt and may be deducted. Expenditures for heat, light and water for the office may be deducted. An annual depreciation of 10 per cent. of the cost of office furnishings and fixtures may be deducted.

Library. Most physicians have a more or less extensive library. Courts have held that medical books during the course of ten years become out of date. For this reason, a 10 per cent. depreciation may be deducted annually.

Taxes, Licenses. Any taxes paid for materials required in professional work are exempt. All licenses which the physician is required to take out, may be taken off the gross income reported. This includes the license to prescribe or use alcohol, narcotic tax, automobile license, local occupational taxes, etc.

Professional Dues. Dues paid to professional associations to which, in the interest of his business or profession, he belongs, are exempt and may be deducted. Also subscriptions to all medical journals or scientific publications are exempt. However, the Internal Revenue Collector has announced that expenses involved in attending the annual meetings of professional societies *are not a deductible item.*

When to Deduct Debts. If the physician's books are kept according to the "Cash Receipts and Disbursements" system, he may not charge off any unpaid debts because "if his books are kept according to this system, he is not only reporting as gross income those accounts which have proved to be good and therefore bad accounts cannot be deducted because they have already been excluded."

If the books are kept upon an "accrual basis" (that is if the basis of expense actually incurred and payable even though not yet paid, or income earned although not yet collected), it is permited to charge off on the income tax blank all debts which have been definitely ascertained to be worthless during the fiscal year covered by the report.

In the same way, the physician is permitted to claim deductions for all other expenses within the scope of his profession, and the amount of his tax is determined on the *net income* which remains after all these items have been deducted.

Earned Income. For several years students of income taxation have contended that income derived from the personal endeavor of a tax payer should not be taxed at as great a rate as is income derived from other sources. This fact is for the first time recognized in the new law, which provides that the income shall be first computed in the usual way and then it shall be recomputed on the earned income as if that income were the entire income.

The term "Earned Income" means wages, salaries, professional fees, or compensation for services.

The first $5,000.00 of net income is considered earned income, no matter from what source derived. The 20% limitation placed on net income derived from a business where both capital and personal service are material income producing factors, is not applicable to physicians whose income is held to be directly attributable to their rendition of personal service. However, in no case may the earned income be considered to be more than $10,000.00.

It is anticipated that the earned income credit provision of the law will create a great amount of confusion in the computation of tax and for the benefit of our readers an example applicable to the income of a physician is given below:

Net income from practice	$ 8,000.00
Net income from rents	500.00
Net income from sale of property	5,000.00
Total net income	$13,500.00

Taxpayer married, with two dependents under 18 years of age.

COMPUTATION

Net income	$13,500.00
Marital exemption, $2,500; dependent exemption, $800	3,300.00
Subject to normal tax	$10,200.00
First $4,000.00 subject to normal 2% tax	4 000.00
	$ 6 200.00
Second $4,000.00 subject to normal 4% tax	4,000.00
Remainder subject to normal 6% tax	$ 2,200.00
Normal 2% tax	$ 80.00
Normal 4% tax	160.00
Normal 6% tax	132.00
Surtax 1% on net income in excess of $10,000.00	35.00
	$ 407.00
Earned income credit (see computation below)	27.00
Total tax	$ 380.00

COMPUTATION OF EARNED INCOME CREDIT

Earned income (income from practice)	$ 8,000.00
Exemption	3,300.00
Subject to normal tax	$ 4,700.00
First $4,000.00 subject to normal 2% tax	4,000.00
Remainder subject to normal 4% tax	700.00
Normal 2% tax	$ 80.00
Normal 4% tax	28.00
Total tax on earned income	$ 108.00
Earned income credit ¼ of tax on earned income	27.00

As mentioned in the first paragraph of this article, the new income tax law has made a sharp division downward in the income tax.

ANNOUNCEMENT

The Ninth Annual Clinical Session of the American Congress on Internal Medicine will be held in Washington, D. C., March 9-14, 1925.

Washington clinicians and investigators of attainment will devote the entire session to amphitheatre and group clinics, ward "rounds," laboratory conferences, lectures, demonstrations of special apparatus and methods, and the exhibition of unusual scientific collections. Civilian and governmental services are united in the aim to make the week useful and memorable.

Practitioners and laboratory workers interested in the progress of scientific, clinical and research medicine are invited to take advantage of the opportunities afforded by this session.

Address inquiries to the Secretary-General.

WM. GERRY MORGAN, Pres.,
Washington, D. C.

FRANK SMITHIES, Sec'y-Gen'l.,
1002 N. Dearborn St.,
Chicago, Ill.

CONSERVATISM IN DEALING WITH PELVIC INFECTIONS

Dr. Thomas E. Sellers, in the New Orleans Medical and Surgical Journal, March, 1924, says:

The high mortality and dreadful morbidity of pelvic infection is a well known subject. About one-third of gynecology deals with pelvic infection. The records of Charity Hospital show 1,207 cases of pelvic infection out of 3,667 gynecological cases handled in 1921 and 1922. On account of the frequency of pelvic infection I feel that this subject cannot be too often discussed, especially the conservative treatment.

There are three outstanding points in the conservative treatment of pelvic infection.

1. Avoid an abdominal section by rest treatment and vaginal drainage.
2. Conserve tube and ovary (if operated) for reproductive purposes.
3. Conserve as much ovarian tissue as possible for its internal secretion.

GOT HIS GUN OFF

A red-headed Irish boy once applied for a position in a messenger office. The manager, after hiring him, sent him on an errand in one of the most fashionable districts. Half an hour later the manager was called to the 'phone and the following conversation took place:

"Have you a red-headed boy working for you?"

"Yes."

"Well, this is the janitor at the Oakland Apartments, where your boy came to deliver a message. He insisted on coming in the front way and was so persistent that I was forced to draw a gun."

"Horrors! You didn't shoot him, did you?"

"No, but I want my gun back."

THE GHOSTS THAT HAUNT US

It isn't the thing you do, dear,
  It's the thing you leave undone,
Which gives you a bit of heartache,
  At the setting of the sun.
The tender word forgotten,
  The letter you did not write,
The flowers you might have sent, dear,
  Are your haunting ghosts tonight.

—Margaret E. Sangster.

Original Articles

MESENTERIC CYSTS*

CHAS. E. HUMISTON, M. D., AND EUGENE C. PIETTE, M. D.
CHICAGO

Since the 16th century, when a Florentinian anatomist, Benivieni,[1] first described mesenteric cysts as "anatomical curiosities" many papers have been published on this subject and about 300 cases reported. The questions concerning the histogenesis and histological structure are now resolved, nevertheless a clinical diagnosis has been made in only a very few cases. We believe the clinical diagnosis can be made more frequently if the surgeons when diagnosing an "abdominal tumor" will keep in mind the possibility of a mesenteric cyst. The great majority of these cysts are located in the mesentery of the small intestine; only about 10% of them, namely, about 30 cases of those reported, were connected with the mesentery of the colon. Because of this fact we think that our case of cyst of the mesentery of the ascending colon presents some interest.

Mr. R. H. Q., 37 years of age, married and the father of three children, entered the West Suburban Hospital on December 24th, 1924, complaining of acute abdominal distress of 24 hours' duration. The pain was not extreme but the patient had been compelled to unfasten his belt on account of the tenderness to pressure. There had not been vomiting. The temperature was normal and the white blood count was not disturbed. Physical examination was negative except for the abdomen, which was tender throughout. The right side showed the greater tenderness and there was a distinct mass under the right rectus muscle on a level with the umbilicus.

The previous history revealed dyspeptic symptoms and a number of similar attacks which on two occasions had led to a diagnosis of appendicitis. The patient had never suffered any serious illness and while in college took a leading part in athletic games, notably baseball. A few months before his admission to the hospital there had been a thorough x-ray examination of the intestinal tract with negative findings. The history, together with the physical examination, appearing to justify the diagnosis of a surgical condition, operation was undertaken having for its objective the mass beneath the right rectus abdominis. Upon opening the abdomen it was at once apparent that the patient was not suffering from any acute inflammatory process. The appendix was not involved and all other viscera seemed normal. However, a bluish red mass 5 centimeters thick was protruding medially from beneath the ascending colon well up toward the hepatic flexure. A constricting ring marked the point where the mass had broken through. Further examination showed the tumor to be a multilocular cyst with thin walls and all subdivisions to be filled with blood. A portion of cyst wall was removed for microscopic examination. Drainage of the many subdivisions of the cyst not appearing feasible, the abdomen was closed without drainage. This treatment seemed advisable on account of the suspicion of malignancy. Fortunately this suspicion has proved unfounded.

By microscopical examination cystic content—a bloody fluid—consists of numerous red blood cells. This fluid does not clot spontaneously.

The walls of the cyst consist of fibrous and fat tissue which are covered with one sheet of flat endothelial cells. Foci of lymphocytic infiltration around the vessels; some eosinophiles are seen also.

Diagnosis: Multilocular mesenteric cyst of lymphatic origin (Lymphangioma multiloculare).

In the history of the study of mesenteric cyst, the date 1900, when Dowd[2] published his classification, is of great importance; he stated the period of histogenetic study. Since then the papers of Niosi,[3] Colmers,[4] Friend,[5] Chomsky,[6] Istomin,[7] have been published on this subject and some new types of mesenteric cysts discovered; and now we have enough material to build up a rational classification of mesenteric cysts and solid tumors of the mesentery. Such attempts were made recently also by Forster[8] and Carter.[9] A very important point in this classification is the separation of false cysts, resulting from inflammation from the true neoplastic cysts.

Classification of the mesenteric tumors:[10]

*From the West Suburban Hospital, Oak Park, Ill.

INFLAMMATORY TISSUE GROWTH	TRUE TUMORS
Pseudocysts	Embryonic cysts
Retention	Lymphatic
Hemorrhagic	Coelomic
Lymphorrhagic	Urogenital
Softening of lymph glands	Intestinal (Enterokystomata)
Echinococci	Dermoids
Solid tumors	Cystic degeneration of solid benign and malignant tumors
Tuberculous lymphoma	Solid tumors
Amyloid tumors	Benign: fibroma, myoma, myxoma, lipoma, ganglioneuroma.
	Malignant: sarcoma, primary carcinoma (very rare)

The old names such as "Chyle," "Blood," etc., cyst are dropped out by modern investigators. The content of a cyst is usually not characteristic and can undergo various changes. Only the histological structure of the wall reveals the nature and origin of the cyst.

When a mesenteric cyst is found, the following points are of great importance:

Localization. Attention must be paid to the connection with the pancreas, gastrointestinal tract (enterokystomata, outer solid tumors of the intestinal walls) or retroperitoneal organs. Numerous adhesions arouse the suspicion of an inflammatory condition. Presence of a zone of distended lymphatics is characteristic of a retention lymphatic cyst. Thickness of the wall is of great importance; it is uniform in true cysts and irregular in the softened solid tumors.

Inner Lining. Smooth inner surface is seen in the urogenital and lymphatic cysts; mucous membrane is present in the enterokystomata; rough surface, covered with attached fibrin is typical of cystic softening of myoma or other solid tumors. Many cavities (multilocular cyst) were observed in the lymphangioma (as it is in our case), some retention cysts, urogenital cysts of ovarian cysts' type and also in the softened solid tumors. In the last case the septa are usually thick and rather rough.

Content is typical only in dermoids, echinococci and occasionally in the enterokystomata (meconium). Chemical analysis of the cystic fluid is of no importance, save in pancreatic cysts (ferments). Microscopical examination of the contained cellular elements is of some significance, permitting sometimes the conclusion about endothelial (lymphatic or coelomic cysts) or epithelial (other forms) nature of the cyst. When a complete enucleation of a cyst is impossible, microscopic examination of the lining is of great importance. As far as we know, not a single case of malignant cyst with endothelial lining has been reported. In the presence of an epithelial lining, possibility of malignancy in a small percentage of cases must be considered. In Heyerowsky's case,[11] drainage of the cavity of a mesenteric cyst resulted in carcinomatous degeneration.

Fixation of the specimen must be performed as soon as possible after the operation because of post-mortem changes, desquamation and disintegration of the epithelial lining. By the microscopical examination particular attention must be paid to all thickenings of the wall. In these places some cellular formations can be found which reveal the point of origin of the tumor.

LITERATURE

1. Benivieni: Cit. from Niosi.
2. Dowd: Annals of Surg. V. 32. 1900.
3. Niosi: Virch. Archiv. V. 190, p. 217. 1907.
4. Colmers: Arch. fur Klin. Chirurgie V. 79, p. 182. 1906.
5. Friend: Cit. in Centralblatt fur Chirurgie.
6. Chomsky. Surg. Archiv of Weljaminoff, V. 29, p. 577. 1913. (Russian.)
7. Istomin: Kharkoff Medical Journal IX 1910 (Russian).
8. Forster: Beitrage zur Klin. Chir. 124: p. 116-138; 1921.
9. Carter: Surg. Gyn. & Obst. Chicago. XXXIII p. 544-545; 1921.
10. Piette: A case of mesenteric cyst. "Wrachebnaya Gazeta," No. 47, 1915 (Russian).
    Piette: Cysts of the mesocolon transversum. Dissertation. Kharkoff, 1920. (Russian).
    Piette: A cyst with ciliary epithelium in the mesoappendix. In preparation. (French).
11. Heyerowsky: Wiener Klinische Wochenschrift, 1908 V6 p. 185.

THE DRAINAGE CANAL IS THE SANITARY POLICE FOR MILLIONS OF PEOPLE

THIS EFFICIENT GUARDIAN OF PUBLIC HEALTH MUST NOT SUFFER CURTAILMENT

HEALTH SUPERSEDES COMMERCE AS A NATIONAL ASSET.

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CHICAGO

The first sewers in the City of Chicago were built in 1856. These discharged either directly into the lake or into the Chicago River and then into the lake. The water supply was secured from intake cribs located one or two miles off shore. With rapid growth of population and the increasing discharge of sewage, either directly into the lake or indirectly by way of the Chicago River, there occurred serious pollution of the water supply. High typhoid fever death rates were prevalent. Epidemics of an explosive nature were frequent. Conditions became so alarming, that in 1886 the Drainage

and Water Supply Commission was organized by Act of the City Council, and was directed to report on the procedure necessary to eliminate the dangerous existing conditions. This Commission reported in 1887, recommending the construction of a canal to reverse the flow in the Chicago River across the drainage divide into the head waters of the Illinois River. The Sanitary District of Chicago was organized in 1889 under an Act of the General Assembly of the State of Illinois for the purpose of carrying out this recommendation. As originally organized, the District comprised an area of 185 square miles with an estimated population of 1,140,000, and has grown by subsequent annexations until at the present time it includes 437.39 square miles of territory, including all of Chicago and some forty-nine other incorporated cities and villages. The present population is estimated at 3,300,000.

The first work undertaken by the District was the construction of the Main Drainage Canal, beginning at the South Branch of the Chicago River at Robey Street and extending southwesterly to Lockport, a distance of 28 miles, where it discharged into the Des Plaines River through suitable controlling works. The main canal was opened in 1900. The flow of the Chicago River was reversed, and it has since continuously flowed away from the lake except at times when a low rate of discharge or the occurrence of an unusually severe storm in Chicago has turned the flow back into the lake. The North Shore Canal built from Wilmette to the North Branch of the Chicago River to provide flushing water through this branch, was opened in 1910. The last step in the scheme of river reversal was the Calumet Sag Canal, which was constructed to reverse the flow of the Calumet River in the southerly part of the District. This Canal was opened in 1922. All sewers formerly discharging into the lake were connected with these canals by large intercepting sewers.

The canal system and the construction of interceptors for removing the sewage from the lake is now substantially completed, and the District is actively engaged in the third stage of its programme,—the construction of sewage treatment plants to supplement the diluting capacity of the canals.

At the present time two treatment plants are in operation,—one for the group of towns west of the city along the Des Plaines River, and the other for the Calumet region in the southerly part of the city. The first is of the so-called "activated sludge type," where the sewage is aerated for a period of several hours in contact with the sludge or solid matter derived from the sewage itself. After continued aeration nitrifying bacteria are developed which in combination with oxygen blown into the sewage in the air effect a substantially complete purification of the sewage. The Calumet plant is of the so-called "Imhoff tank type" and provides only for the removal of the suspended matter. In addition to these two plants, the District is now engaged in the construction of a large plant for the North Side, which will also be of the activated sludge type, and which, when completed, will care for the sewage of approximately 800,000 people. This plant is expected to be in operation in 1927. A population of about 1,000,000 will then be provided with facilities for complete or partial treatment of waste.

In 1921, an Act was passed by the General Assembly of Illinois, requiring the Sanitary District to construct treatment works, which beginning in 1925 would provide for treatment at the rate of 300,000 people per annum until the sewage of 60 per cent of the then population, or on a basis of approximately 1,800,000 people, had been provided with sewage treatment. A comprehensive programme for carrying out these requirements, and for supplementing the dilution capacity of the Canal has been prepared which contemplates the complete or partial treatment of practically all sewage originating within the District by the year 1945, at an estimated cost of $125,000,000, in addition to the $30,000,000 which has already been expended on treatment plants.

The best index of the effect of diverting the sewage from the lake by the construction of the Main Channel and its branches, together with the intercepting sewers for diverting the sewage to these canals, is afforded by the very marked reduction in the death rate from typhoid fever. The following table shows the annual typhoid fever mortality rates from 1867 to date:

ANNUAL TYPHOID FEVER MORTALITIES IN CHICAGO PER 100,000 POPULATION

Years	Typhoid Fever Mortality	Per Cent of Total Mortality	Remarks
1867	73.3	3.45	
1868	79.3	3.34	
1869	65.3	2.82	
1870	87.4	3.66	
1871	61.0	2.92	
1872	142.6	5.16	
1873	71.6	2.85	
1874	53.4	2.63	
1875	51.7	2.62	
1876	41.2	1.96	
1877	37.0	1.98	
1878	33.4	1.97	
1879	42.3	2.41	
1880	34.0	1.63	
1881	105.2	4.03	
1882	82.4	3.49	
1883	62.2	3.12	
1884	56.2	2.84	
1885	74.6	3.98	
1886	68.6	3.53	
1887	50.3	2.48	
1888	46.7	2.38	
1889	48.4	2.67	
1890	91.6	4.61	
1891	173.8	7.20	
1892	124.1	5.68	
1893	53.5	2.47	
1894	37.5	2.06	
1895	37.9	2.14	
1896	52.6	3.23	
1897	29.3	2.00	
1898	40.8	2.79	
1899	27.2	1.73	
1900	19.8	1.35	Opening of Drainage Canal
1901	29.1	2.09	
1902	44.5	3.03	
1903	31.8	2.03	
1904	19.6	1.42	
1905	16.9	1.21	
1906	18.5	1.37	Opening South Side Intercepters
1907	18.2	1.16	Completion South Side Intercepters
1908	15.8	1.09	Opening North Side Intercepters
1909	12.6	0.87	
1910	13.7	0.90	Pasteurization of Milk
1911	10.7	0.74	Completion North Shore Intercepters
1912	7.6	0.51	Chlorination of Water started
1913	10.6	0.71	
1914	6.9	0.49	
1915	5.3	0.37	
1916	5.1	0.35	
1917	1.6	0.11	Complete chlorination of water
1918	1.4	0.08	
1919	1.2	0.09	Completion Evanston Intercepters
1920	1.1	0.09	
1921	1.1	0.09	Completion Calumet Intercepters
1922	1.1	0.10	Opening of Calumet-Sag Channel
1923	1.0	...	
1924	1.5	...	

The effect of the opening of the Drainage Canal and the diversion of sewage from the Lake is immediately apparent and while other factors, such as the pasteurization of milk and the chlorination of the water supply, have each had their effect in the reduction of water borne diseases, the most important factor is undoubtedly the diversion of sewage from the lake, which is the only feasible source of Chicago's water supply. The death rate from typhoid fever has now reached very small proportions, and today Chicago holds the record in this respect as compared with other cities located on the Great Lakes, as the following table will show:

TYPHOID FEVER DEATH RATE IN TEN-YEAR PERIOD AVERAGES, PER 100,000 POPULATION

For Cities of over 100,000 Population in Great Lakes Region

Years Inclusive	Chicago	Milwaukee	Detroit	Cleveland	Buffalo	Rochester	Hamilton	Toronto
1870-79	62.2							
1880-89	62.9	33.1	*49.5	59.9	**40.9	33.5	†39.4	58.9
1890-99	66.8	25.4	31.4	42.6	33.8	27.4	21.4	41.9
1900-09	22.7	20.2	21.8	36.0	26.9	13.8	17.4	21.3
1910-19	6.4	14.7	14.8	8.9	14.0	7.2	9.3	12.6
1920-23	1.3	1.88	5.02	2.6	4.23	2.15	3.7	2.2

*1882-89 inclusive.
**1881-89 inclusive.
†1885-89 inclusive.

The Main Channel was designed for a capacity of 10,000 cubic feet per second. This flow was considered adequate for a population of 3,000,000 and was thought necessary to prevent reversal of flow of the Chicago River into the lake in times of storm. In a permit issued by the Secretary of War in 1901, however, the District was refused the right to withdraw more than 4,167 cubic feet per second from the lake. This amount was based originally on the requirements for safe navigation in the Chicago River, but the river has since been widened and deepened by the District to prevent objectionable currents even with a flow of 10,000 cubic feet per second. Nevertheless, the District has never succeeded in securing permission to increase this amount, and has been in litigation with the Government for some years in an endeavor to secure authority for withdrawing 10,000 cubic feet per second. This litigation was finally carried to the Supreme Court and has recently culminated in a decision handed down in December, 1924, in which the authority of the Secretary of War has been upheld, and the injunction to restrain the District from withdrawing more than 4,167 cubic feet per second has been sustained. The main points of contention involved in the withdrawal of water are two:

(1) That navigation is affected by reason of the permanent lowering of the lakes on account of the diversion at Chicago; and

(2) That water which might be used for power development at Niagara and on the St. Lawrence River is permanently diverted from the watershed of the Great Lakes.

The first objection is raised largely by the shipping interests in the neighboring states; the second, primarily by Canadians interested in the development of power.

The District has offered to pay the cost of

Regulating Works at the outlets of the Great Lakes that will more than restore the permanent lowering of something less than 6 inches due to the diversion of 10,000 cubic feet per second at Chicago, and feels that the time when this additional amount will be required for power development at Niagara and on the St. Lawrence River is many years in the future, as the amount diverted is not over 5 per cent of the total flow of water in the Niagara River.

The decision of the Supreme Court, in which it was held that diversion above 4,167 cubic feet per second is illegal, was based solely upon the legal right of the War Department to control shipping and harbor development in the Great Lakes. No consideration was given to aspects pertaining to public health. A broad viewpoint toward the situation must necessarily consider the importance of protecting the water supply of the Nation's second city. Twenty-eight of the most eminent engineers of the United States have concluded after thorough study of the situation that a reduced diversion will result in reversal of the river into the lake many times annually, with greatly increased bacterial counts in the raw water at the cribs. At present the unchlorinated water has a 37° agar count of from 50 to 400 per c. c. at the cribs and a bact. coli index of from 1.0 to 10.0 per 100 c. c. The chlorinated tap water has a 37° count of from 1 to 10 per c. c. and a bact. coli index of from 0.00 to 2.00 per 100 c. c.

The excellence of this supply may be contrasted with the quality of lake water at the intakes of several Indiana towns, Hammond, Whiting and East Chicago, near the mouth of the Calumet River and the sewage polluted canal at Indiana Harbor. In those places the raw water has 37° agar counts of from 10,000 to 20,000 per c. c., and bact. coli indices of from 5,000 to 13,000 per 100 c. c. The unfiltered but chlorinated tap water at Hammond frequently has agar counts as high as 200 per c. c. and bact. coli up to 2,000 per 100 c. c. A sewage-polluted water of this character is highly undesirable as a source of supply for the City of Chicago, even with filtration. The safety of the Chicago supply, dependent as it is upon the continuous diversion away from the lake of the sewage from 3,300,000 people, surely must have some weight as against a controversial half-foot more or less of water levels in the Great Lakes. It is time the public health aspects of the situation should be given the careful consideration they deserve.

25 E. Washington St.

THE VISUALIZATION OF THE BILIARY TRACT. A NEW METHOD BY INTRAVENOUS INJECTIONS OF TETRABROM - PHENOLPHTHALEIN.*

FRANK SMITHIES, M. D., AND RICHARD BARTLETT OLESON, M. D.

CHICAGO.

Since the introduction of the x-ray, the constantly increasing applicability of its usefulness in the domain of diagnosis has progressed until now procedures are available by which most of the hollow viscera can be rendered opaque for visualization. Heretofore, however, this has not been true in the case of the gall bladder. The unsatisfactory appearance of this organ on the ordinary Roentgenological plate is well known to all of us. In the interpretation of such films wide scope is left to the imagination of the physician. If the faint outlines of an unusual shadow can be seen, the observer is left in doubt as to whether this is due to a Spigelian lobe of the liver, a Riedel's lobe, or possibly some opacity in the upper pole of the right kidney. In case these can be reasonably eliminated and the shadow definitely recognized as being that of the gall bladder, neither in a single plate nor in any ordinary series can Roentgenological information be gained as to whether the cystic duct is patent —and the mobility of the organ remains undetermined. There is an exception to be noted in the first instance, in that with long, continued cystic obstruction, a large hydropic viscus frequently develops, throwing a distinguishable shadow—but usually the fact of enlargement has already been determined from the history plus the customary procedures of inspections, palpation and percussion *before* the patient is sent to the Roentgenologist; so the confirmatory evidence revealed by his investigations, while interesting, is rarely of vital significance.

Again, it is frequently noted that vague shadows

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exist, due to the presence of calculi sufficiently mineralized to be visible—or precipitated bile in a half filled bladder may furnish a dubitable image, as apt to mislead as to guide, in a recognition of true conditions. So long as one is not certain whether the bladder is fixed by adhesions or freely mobile, operative planning by the surgeon is attended with mental reservations, nor can the internist so confidently undertake an attempt to relieve his patient without operative interference. May we regard any of the recent attempts to improve, Roentgenologically, upon the simple x-ray, plate as offering much help in this problem? Some aid is furnished by exposures made of the cholecystic region before a medical biliary tract drainage, as compared with similar plates of the same region following this procedure, but only where conditions are exceptionally favorable. Procedures attended by no great measure of success are those involving attempts to inject oxygen into the colon, and to block off the small gut by expansile bougies or small balloons. Palefski's suggestion that the ordinary duodenal tube be swallowed, and the progress of the bulb watched fluoroscopically, the shape assumed by the tube giving some information in occasional instances of kinked or angulated bowel, as to the presence of such a complication, is interesting, but totally fails to aid us with information as to the condition of the gall bladder itself.

A method which might be as satisfactorily applied in revealing this organ, as are the various opaque solutions utilized in kidney and ureteral work, has long been sought, but until recently the difficulty of injecting the biliary passages through the common duct has proven insuperable. Nor, indeed, has that particular problem even now been solved in the form stated, but the fortress has been attacked from a different angle, and the blood stream, rather than the excretory channels, selected as the avenue of approach. For this brilliant concept, the profession is indebted to the ingenuity and perspicacity of Dr. Evarts A. Graham and Warren H. Cole, working at the Washington University Medical School and Barnes Hospital in St. Louis, who published their results in the Journal A. M. A., Feb. 23, 1924, page 613. After experimenting with various substances they finally found the best results to arise from the use of a calcium salt of tetrabromphenolphthalein, which possesses the requisite characteristic of excretion from the blood stream in the human body through the bile —of excretion practically only through that channel—of a possession, during this excretion of such a degree of opacity to the Roentgen rays as to render visible, by its presence, these organs so engaged in its removal, and of such moderate grade of toxicity as to render its employment possible. These writers, in their brief preliminary presentation of their method, content themselves with the tentative suggestion that it might possibly be found that the degree of visibility imparted to healthy biliary tracts would prove to be so much greater than that bestowed upon similar regions in individuals having disease of more or less intensity, as to furnish, in these domains, a quite definite degree of diagnostic information which would warrant the customary utilization of this procedure in the investigation of bile tract pathology. This seemed so rational a conclusion that we undertook, in our office, upon a number of patients the intravenous injection of this substance according to the technique of Dr. W. H. Cole, as follows:—

To 5 grammes of tetrabromphenolphthalein add 1 gramme calcium hydroxide. The distilled water to be used in dissolving it must be colder than room temperature and the mortar should be chilled. To the mixture in proportions named above add from time to time a few drops of water and grind thoroughly, then add 300 c.c. cold distilled water in three portions of 100 c.c. each. When the solution is finished it should have a purple violet color. Prepare 2 grammes of calcium lactate, dissolved in 5 c.c. of hot water. Cool this to room temperature and add to the dye solution. The finished product should now be sterilized 15 to 20 minutes. If a precipitate forms add sterile water or sterile normal salt solution and stir until the precipitate dissolves. This should now be cooled to approximately blood temperature, when it may be administered.

On the day of the injection the patient is to have neither breakfast nor lunch, and his supper is to be a meal of carbohydrate foods. The injection should be given between 8 and 9 in the morning, on an empty stomach. It should be administered by means of a salvarsan gravity apparatus, and from time to time the solution should be agitated by glass beads. The injection is to be allowed to flow into the vein very slowly. Should nausea develop, the injection may be interrupted for 15 to 20 minutes, during which time the needle should remain in the vein. A hypodermatic injection of codeine, in suitable doses, is very efficacious in relieving the nausea. It is permissible to consume as long as two hours in making the injection, but that period of time should not be

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exceeded. The fluid should be maintained at blood temperature throughout the injection.

Following the injection the patient is to lie on the right side, well over on the belly, and roentgenological films should be taken to the number of 7, on the following schedule:

No. 1—the day before the injection.
No. 2— 4 hours after the injection.
No. 3— 8 hours after the injection.
No. 4—24 hours after the injection.
No. 5—32 hours after the injection.
No. 6—48 hours after the injection.
No. 7—56 hours after the injection.

In order that you may judge for yourselves of the efficacy of this new compound, I will shortly exhibit a few of our slides with brief comments. Before doing this, however, we would suggest that modifying factors will be found to arise from the following considerations:—

1. In hepatic cirrhosis, the excretory power of the liver is abnormally sluggish, and this must be allowed for in drawing conclusions as to the diagnosis of gall bladder conditions based upon a delay in the appearance of the salt in sufficient concentration to cast a visible cholecystic shadow.

2. If the gall bladder is especially vigorous in its contractions the agent may be expelled so rapidly as to prevent a sufficient degree of collection, and the viscus hence remain invisible.

3. Much will depend upon the patency—the obstruction, or the alternate patency and obstruction—of the cystic duct. Apparently, in doubtful cases, a series of tests at short intervals may be desirable, provided it be found that there is no cumulative toxicity to be feared in human beings under such circumstances. So far as our rather brief experience may serve to elucidate this question, we have no suspicious results to report; none of our patients, under repeated injections, showed any notably untoward symtoms whatever.

4. Undoubtedly, the more nearly empty of ordinary bile the gall bladder can be made before new bile enters carrying the opaque salt, the better shadow will result. Hence a preliminary medical drainage of the biliary tract may prove to be very helpful in preparing the field for this new procedure.

Mrs. H.:

Chronic biliary tract infection with chronic interstitial pancreatitis—pancreatic deficiency and intestinal type indigestion; no definite operative indications. The clear outline of the secured shadow in all these plates strongly suggests a freely mobile, fairly normal organ. Our first clinical impression was to the effect that no operation was indicated here—and certainly the x-ray findings would not controvert this opinion, if the positions taken by Moynihan, Graham and Cole be considered correct.

Miss W.:

Small ulcer of stomach just proximal to pylorus; infected gall bladder, non-operative. Again, in this case, we did not advise operation—nor did the shadow seem to indicate any necessity for surgical interference.

Mr. L.:

Spastic colitis, inactive duodenal ulcer; mild gall bladder infection. In the case of Mr. L., relief was secured without surgical interference—nor would the gall bladder shown here seem to urge this procedure. This case is interesting as showing the visualization of the biliary tract following a medical drainage with subsequent injection of the dye.

Mrs. S. H.:

Small gastric ulcer; mild gall bladder infection. These plates are of unusual interest in that the shadow shown on the reduced slide as now exhibited is much more clear and distinct than on the larger plates. Evidently the process of condensation from plate size to film size has served to accentuate formerly indistinct shadows—and the thought naturally suggests itself that vague plates may at times be improved in distinctness by photographic reduction. Otherwise the plates are those of a supposedly mildly infected gall bladder, where this test would suggest the advisability of a surgical exploration which has not yet been carried out. This patient is still in the hospital under observation.

J. B.:

Chronic facial eczema—infected gall bladder with enlarged lymph gland. These slides show an apparently fairly normal gall bladder. The patient is the small daughter of a prominent Illinois physician, whose father referred her to us on account of a severe, chronic, facial eczema of many years standing, which had been in the hands of competent dermatologists without more than temporary relief. In spite of the revelations of this test, we advised appendectomy and cholecystectomy, and these operations were performed last week. The gall bladder seemed quite normal in size and gross appearance, but the glands along the course of the cystic and common ducts were notably enlarged and hard. The immediate result upon her face has been most gratifying—the crusts and scales have disappeared as though melted away, leaving a skin almost normal in appearance save for myriads of fine wrinkles—since the epidermis has not yet adapted itself to the shrinking of the subcutaneous tissues. The operative findings confirmed the revelations of this test as to the size and shape of the gall bladder.

A. R.—Chronic colitis; infected gall bladder and biliary tract; old tuberculosis. In this case the relative dimness of the shadow would suggest that surgery might be beneficial, but the patient, presenting many healed tuberculosis lesions in lungs and intestines, has improved so greatly under medical treatment that he is satisfied to remain in his present

condition. At best, he would be rather a poor operative risk.

Mrs. Hk.—1. 2.

These two plates represent the findings in the case of the only patient in this series whose body came to autopsy. Entering the hospital deeply jaundiced, a diagnosis of calculous cholecystitis was made and operation advised. The injection of the dye for the performance of this test did not seem to impart any especially unfavorable tendency to the course of the disease—the steadily increasing jaundice continuing to deepen without accentuation. When consent for operation was finally secured, it only anticipated a lethal exitus by a few hours. The autopsy revealed an infected and ulcerated gall bladder in which a few stones seemed a relatively unimportant factor in the clinical picture.

SUMMARY

Drs. Graham and Cole suggest a novel procedure whereby a dye, in non-poisonous doses, injected into the venous blood, is shown to be excreted by the liver as a constituent of the bile. The drug possesses the property of rendering the biliary tract opaque to the x-ray, so that it is possible to secure pictures whereby the visability of the entire biliary tract is markedly enhanced. They suggest that, in general, patients receiving this dye may be expected to exhibit shadows outining the biliary tract in direct proportion to the extent to which this tract is free from disease. The less pathology, the clearer the picture. Our experience with this method would tend to confirm in all respects their published findings. We have seen no evidences of toxicity. The contentions of the original authors as to the enhancement of the gall bladder's visability would seem to be borne out by our experience; and in cases that have come to operation or to autopsy, the findings when the body was opened have confirmed those previously suggested by this test.

We have had one experience which has very likely already occurred to the original authors, but which they have not, at least as yet, mentioned in their published work, namely that shadows of relatively slight intensity upon the Roentgenological plate will be accentuated and more clearly brought out in a small photographic reproduction of this plate of the size ordinarily utilized in the manufacture of lantern slides. It conseqently seems to us that this may be an advantageous procedure at times, when dealing with extremely indistinct Roentgenological shadows.

DISCUSSION

DR. DENEEN, Bloomington, continuing discussion, said: I would like to ask Dr. Oleson if he gets any reactions from giving this drug. If he does, what they are, and what treatment he gives, and if there is any possible danger in giving this drug for diagnosis.

DR. RICHARD B. OLESON, Chicago, closing the discussion, said: In response to the two questions that have been asked the fluoroscopic appearance is practically that shown on the plate. It is more difficult to see the shadow on the fluoroscope.

Regarding the matter of the toxicity of the dye, it is undoubtedly toxic if the dose is excessive. I gave the technique of the preparation of the solution. That is about as strong as may be used. In some cases of nausea at the time of the injection we may have to interrupt the injection. One patient required a small dose of codeine. I think that was purely psychological, but at all events, the codeine was given and there was no further trouble.

THE MANAGEMENT OF THE TOXEMIAS OF PREGNANCY*

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CHICAGO.

By toxemia of pregnancy is meant an abnormal condition in pregnancy produced by toxins which circulate in the blood. What these toxins are and where they originate we do not know, although many theories have been propounded. By some, the origin of the toxins has been attributed to disturbed metabolism of the mother, the liver and kidneys especially being held responsible. By others the fetus, and in particular the placenta has been considered the origin of the toxins. Because we do not know what these toxins are and where they arise, our treatment can only be empirical.

For general purposes, the toxemias of pregnancy may be divided into two classes, namely, those occurring early and those occurring late in pregnancy. Of those which occur early in pregnancy only pernicious vomiting or hyperemesis gravidarum will be discussed in this paper. Of the late toxemias the treatment of pre-eclamptic and nephritic toxemia and eclampsia will be reviewed.

It is generally agreed that about 50 per cent. of pregnant women suffer from nausea and vom-

*Read before the Lee and Ogle County Medical Societies at Dixon, Ill., July 30, 1924.

iting between the fourth and twelfth weeks of pregnancy. Most of these women are only slightly inconvenienced by these symptoms; but there are a few in whom the nausea and vomiting produce disastrous results. The transition from the so-called normal amount of vomiting to that which we consider pernicious is usually gradual and it is often hard to sharply differentiate the normal from the abnormal. For the patients with a moderate amount of nausea and vomiting we usually recommend the following: In the morning before getting out of bed the patient should eat a few crackers, preferably without the addition of any fluids. She should then rest in bed for twenty to thirty minutes before getting up. During the day instead of eating three meals, she should eat six or seven small meals, consisting essentially of carbohydrates. Meats, fish, eggs, cheese, peas and beans should be eliminated from the diet. Water had better not be taken during meals but rather midway between meals. On this regime most patients improve. We seldom use drugs because we have not found that any help except through suggestion.

When the patient continues to vomit more and more despite treatment and suggestion and retains practically nothing taken by mouth, the condition approaches the pernicious type. If the patient complains of pain in the ribs (from vomiting), salivation and constipation, if the pulse becomes weak and rapid and the blood pressure falls, if the urine is dark in color, markedly decreased in amount and contains albumin, casts, diacetic acid and acetone, if the patient looks emaciated and her skin is pale and dry, if she becomes slightly jaundiced and especially if there is tenderness over the liver, we have an outspoken case of the pernicious vomiting of pregnancy. In the very advanced cases there may be low fever, delirium, stupor and coma. Occasionally the vomiting ceases and leads the physician to believe the patient is improving; but the other symptoms remain and the patient dies suddenly. The fetus usually remains alive in patients with pernicious vomiting. When a patient becomes very toxic the fetus may die and be aborted. In such cases the vomiting may cease immediately after the abortion.

In treating pernicious vomiting of pregnancy we must bear in mind that there may be four etiological factors for this condition; namely: nervous, reflex, gastric and toxemic. Before instituting treatment we must make certain the patient is pregnant and this is sometimes difficult. A careful pelvic examination should be made to rule out any pelvic abnormality, such as retroflexion of the uterus, as a possible cause of the vomiting. If such a condition is found it should be corrected. A gastric or duodenal ulcer or perhaps a pathologic gall-bladder may be responsible for the vomiting. Occasionally pyelitis is a cause of pernicious vomiting. If no definite cause is found, the mental aspect of the patient must be considered in the treatment; for in most cases of pernicious vomiting there is a large nervous element. In nearly all advanced cases the toxemia is superimposed upon the nervous basis.

For the relatively mild cases of pernicious vomiting, attention to the diet as outlined above and to the bowels will help. The patient should not sleep in the same room with her husband for it is not infrequent that the husband is the cause of the vomiting. In severe cases the patient should be isolated, preferably in a hospital, and no visitors, not even the husband, should be permitted to see her. If possible, a capable nurse should be called in. The patient's room should be kept dark. Treatment consists in keeping the patient in bed, seeing that the bowels move daily, giving nothing by mouth for at least the first twenty-four hours and giving fluids containing five per cent. glocose, five per cent. sodium bicarbonate and sodium bromide per rectum. When the patient improves, dry food, such as toast, crackers, jelly, dry chops, etc., may be given. Water should be given not with meals but between meals. Upon further improvement a general diet may gradually be resumed.

Of great importance in the treatment of pernicious vomiting is suggestion; for as I said before, there is a nervous element in nearly all the cases. Medicinal therapy is of use chiefly because of its psychic effect. This holds true for corpus luteum as well as for most drugs. However, luminol is distinctly helpful. Painful treatment, such as giving salt solution under the breast with large, dull needles, helps considerably because of the pain it produces and the fear of a repetition of this procedure. In advanced cases we have had great success with the duodenal tube through which we feed the patient fluids, sodium bicarbonate, sugar, orange juice, milk, eggs and other foods. We also give laxatives and

sedatives through the tube. Since using the duodenal tube we have not had to interrupt pregnancy for pernicious vomiting of pregnancy. If, however, a patient should continue to grow worse despite the above treatment it is better to interrupt pregnancy early; for if performed late it might be of no use. It is far better to interfere too early than too late. If the pregnancy is very early, this can be done by a simple dilatation and curettement; but if advanced, it may be advisable to pack the cervix with gauze or place a tent in the cervix for twenty-four hours and after dilatation has occurred, empty the uterus. Occasionally a vaginal hysterotomy is the simplest procedure. One thing which must not be forgotten before interrupting pregnancy is consultation with another physician and consent in writing.

Of the late toxemias, we shall discuss those with and those without convulsions. The toxemias without convulsions are generally divided into the pre-eclamptic and the nephritic types; but it is usually impossible to differentiate these two unless one knows that the patient had a chronic nephritis previous to pregnancy or early in pregnancy.

The correct differentiation between the two types is usually made long after labor, at which time, if there is evidence of chronic nephritis we assume the toxemia had been of a nephritic type. However, when the toxemia exists, it matters not whether we are dealing with the pre-eclamptic or the nephritic type since the treatment is the same for both.

In a consideration of the toxemias of late pregnancy, prophylaxis is most essential. By this I mean proper prenatal care. The mortality from eclampsia varies between 15 and 25 per cent. and in this country alone between 4,000 and 5,000 women die every year from eclampsia. Nearly all these deaths are preventable. By careful observation of patients during pregnancy eclampsia can be eliminated almost entirely. Such observation includes taking the blood pressure and examining the urine at least every three weeks throughout pregnancy and paying attention to symptoms, such as headache, edema, marked constipation, diminished urinary output, epigastric pain, spots before the eyes, etc.

At the Chicago Lying-in Hospital and its dispensaries, of 40,000 patients, not one case of eclampsia developed among those who attended our prenatal clinics regularly. Other clinics with smaller numbers of patients can perhaps show the same results. This means that eclampsia is almost absolutely preventable and it is the physician who can prevent this complication. Of course education of the public is most essential; for without the co-operation of the patients, little can be accomplished. Aside from the enormous loss of mothers there is a still greater loss of babies; for about one-half of the babies of eclamptic mothers die, even if the mothers survive. The fetal deaths are due to prematurity, the toxemia which affects the mother, asphyxia produced by the convulsions, drugs given the mother and injuries during birth, especially if instruments are used.

The actual treatment of all the toxemias is empiric because we do not know the etiology. When the patient's blood pressure rises and the urine contains albumin, with or without casts, and especially when there is edema, toxemia is present. The patient should be placed on a diet consisting essentially of starchy foods, eliminating nearly all proteins. She should be encouraged to drink plenty of water. The bowels must be kept open, the blood pressure should be taken and the urine examined at frequent intervals. If such symptoms as severe headache, vomiting, epigastric pain, spots before the eyes appear and especially if the blood pressure continues to rise and the amount of albumin in the urine increases, the condition should be considered grave. The patient should be kept in bed and in addition to a rigid diet, the bowels and kidneys should be stimulated to increase elimination. For the bowels it is best to give saline purgatives, especially if there is edema; but vegetable cathartics should be substituted occasionally. The kidneys are best stimulated by the introduction of large amounts of water by mouth, by rectum and hypodermically. If edema is marked, too much fluid should not be given. Fresh air is important and the patient should be encouraged to take deep breaths a number of times a day. If the patient does not improve under this treatment and the symptoms increase in severity it is best to empty the uterus. In doing this, that method should be chosen which will terminate the pregnancy quickest and with the least amount of injury to the mother. In multiparous women simple rupture of the membranes usually suffices; but a bag may have to be inserted into the uterus. In Primiparas

the insertion of gauze into the cervix or a bag into the lower uterine segment, will stimulate labor pains. In toxemic patients labor as a rule is rapid. As soon as there is sufficient dilatation to permit delivery of the baby without injury to the mother, labor should be terminated. Nearly all patients who suffer from toxemia without convulsions, improve immediately after the uterus is emptied if this is done early. If labor is terminated after the toxemia has progressed considerably, convulsions may occur after delivery.

When a patient has a convulsion she is to be considered critically ill. Usually other convulsions follow. If possible the patient should be in a hospital. In treating patients who have eclampsia, one of three lines of procedure may be followed. First, the uterus may be emptied immediately after the first convulsion. Second, one may give drugs to quiet the patient and not interfere with the pregnancy mechanically at all. Third, one may use sedative drugs and if there is no improvement, empty the uterus. The method of choice will depend upon the viability of the child, the surroundings, the condition of the cervix and the skill of the operator.

In a hospital the best treatment is that which empties the uterus quickly; but this must be done as soon after the first convulsion as possible. If one waits until the patient has had many convulsions, termination of pregnancy may not affect a cure. Furthermore, if the operation is performed early, many babies are saved which would otherwise be lost. For a primipara with a closed cervix and a viable child we perform a cesarean section, doing the low or cervical operation. We generally employ ether as the anesthetic and never use chloroform because it may produce fatty degeneration of the liver. Of late we have been doing cesarean sections under local anesthesia (novocain) with great success.

If the patient is at home the best treatment is the conservative one; but this line of treatment, of course, may also be employed in hospitals. The patient is given a quarter or a half grain of morphin hypodermically immediately after the first convulsion or when first seen. Two hours later 20 to 30 grains of chloral are given per rectum. Two hours after this another quarter of a grain of morphin is given hypodermically and this is followed two hours later by 20 to 30 grains of chloral per rectum. After this, 20 to 30 grains of chloral are given per rectum every few hours depending upon the patient's condition. In addition to the use of drugs it is advisable to remove between 600 and 1000 c. c. of blood from the patient. The higher the blood pressure the more blood can be drawn off with safety. Too much blood should not be removed because if the patient goes into labor she may lose a large amount of blood at that time. There is, however, not much to fear from this because as a rule blood from eclamptic patients clots easily.

During convulsions it is essential that precautions be taken to protect the patient against injury. We always have a clothespin wrapped in a handkerchief near the patient's head so that it may be inserted between the teeth as soon as a convulsion appears imminent. This will prevent the tongue from being bitten. The patient should not be held down forcibly except to prevent her from falling out of bed or hurting herself otherwise. It is, of course, essential that some one watch the patient all the time. The patient should lie on her side if possible, to prevent aspiration of any vomitus or saliva which might lead to aspiration pneumonia. The room should be kept dark, fresh air should be admitted and noises prevented. We do not use hot packs to stimulate the skin because it depresses the patient and concentrates the toxins in the blood. We do not employ gastric lavage or colonic flushings because they are unnecessary and may irritate the patient and thus produce convulsions.

In any case, if convulsions continue to recur, the baby should be delivered when there is complete dilatation, by forceps if the head is engaged, otherwise by version and extraction. If the cervix is effaced and almost completely dilated the dilatation may be completed manually; but this must be done slowly. Then delivery can be accomplished with forceps or version depending upon engagement. If the cervix is closed and the baby is small, a bag may be employed to obtain dilatation, or a vaginal cesarean section performed.

During the delivery of a toxemic patient every precaution must be taken to guard against infection because toxemic patients are very prone to develop sepsis. While the baby is being born, the expulsion of feces gives trouble. This is usually due to the cathartics given to aid elimination and because of danger of contamination with feces during labor, it is wise to withhold purgatives until after delivery if one decides to termi-

nate pregnancy. If the patient bleeds moderately during delivery one need not hurry to check it, for the loss of blood will do good. As little anesthestic as possible should be used and as little sewing should be done as is necessary.

When the patient improves after delivery, water is given by mouth, and this is followed by a milk diet. The bladder must be watched to prevent over-distention and great care must be exercised to prevent infection. This applies particularly to the care of the perineum after bowel movements, voluntary as well as involuntary. The patient should not be permitted to nurse her baby until she has been fully conscious for three or four days and she should not be considered out of danger until after about two weeks; for convulsions may recur a number of days after delivery. The blood pressure and urine should be watched for many months after confinement and the patient should be advised to wait a few years before becoming pregnant again.

In summing up I should like to emphasize that severe grades of toxemia and especially eclampsia are nearly always preventable. To eliminate eclampsia, prophylaxis during pregnancy is necessary and for its success education of the public is essential. The layman must be given to understand that a labor case begins at the time of conception and that it is important for the pregnant woman to see a physician as soon as she knows she is pregnant. Once in the hands of a physician the responsibility rests largely upon the latter. It is his duty to properly instruct the woman and see that his orders are carried out. In the toxemias of pregnancy more than anywhere else in medicine is it true that prevention will almost entirely eliminate the necessity for cure. Prevention here lies in proper antenatal care.

426 East 51st St.

ECTOPIC PREGNANCY AND ACUTE APPENDICITIS*

MATHER PFEIFFENBERGER, M. D.,
ALTON, ILLINOIS

January 26, 1922, Mrs. O., aged 40½ years. No constitutional diseases in family. Past history, measles and scarlet fever in childhood; meningitis at 19 years of age. Has given birth to two children, the elder being four weeks premature, and the younger being two weeks premature. No miscarriages. No venereal history, nor infection following confinements. Menstruation started at 18 years of age, irregular and always painful after birth of first child.

Eight years ago, three weeks after birth of first child, had an attack of appendicitis, refused operation at that time. Four years ago had another attack and for the last few years has never been free from pain in the right side. Attacks usually started by loss of appetite followed by nausea and pain which radiated toward the left side. Constipation has always been marked.

Examination of chest negative.

Present illness: Prior to the onset, menstruation had been regular, scant and painful; patient had not noticed usual signs of pregnancy. Menstruation started December 12, stopping December 14. December 18 menstruation appeared again, lasting one and one-half days. December 25 flowed one day. December 29 pain became marked, patient complained of weakness and went to bed, shortly after suffering intense pain and on going to bathroom became nauseated, weak and faint. She applied heat and took a cathartic obtaining some relief. January 2 sat up for a while. January 6 had a recurrence with intense pain which lasted all night with some pain on the left side. No appetite, tenderness over the whole abdomen, the next day she was easier. For a week following there was marked improvement. January 8 slight menstrual flow, which continued until January 14. Was examined by writer at this time and extrauterine pregnancy diagnosed but patient would not consent to operation. On January 26 she was sent to the hospital.

On examination at the hospital her temperature registered 99.8 degrees, respiration 24, pulse 90, blood count showed 12,600 white cells per cubic millimeter, urinalysis negative. Right rectus muscle was rigid and severe pain at McBirney's point.

Bimanual examination revealed a soft cervix, a mass in the cul-de-sac behind the uterus and tenderness throughout the pelvis more acute on the right side. The breasts showed secretion present, the areola about the nipples was dark.

A diagnosis of acute appendicitis and ectopic

*Read before Section on Surgery, Illinois State Medical Society, Springfield, May 7, 1924.

pregnancy was made at this time and operation advised.

The patient was immediately prepared for operation, anesthetized with ether. Right rectus incision made, cecum located and appendix found adherent behind the uterus; the fimbricated extremities of both tubes were free, as were the ovaries. The omentum was adherent over the end of the appendix and mass in cul-de-sac. This was dissected loose, the cecum delivered with appendix. A slight hemorrhage occurred when the appendix were separated from the mass. The mesoappendix was ligated and cut, a purse string of linen placed around the base of the appendix, the stump crushed, ligated with catgut, amputated with cautery, invaginated, purse string tied, a Lembert suture placed over purse string and large bowel replaced in abdomen. The mass in the cul-de-sac was now lifted out with very little difficulty, which mass proved to be a sac containing a three months fetus to which the end of the appendix had been adherent. Hot saline sponges were applied to the cavity; all bleeding stopped. The wound was closed without drainage, the peritoneum and fascia were closed separately with catgut and the skin with subcuticular silver wire.

The patient made an uninterrupted recovery, being discharged from the hospital on February 8, or 13 days after after operation.

This unusual case interested the essayist enough to have the literature gone over and he found it rare enough to report the results of the investigation.

Appendicitis long ago became a commonplace of medical practice. Ectopic gestation, though by no means common, is still reported with sufficient frequency to warrant the editors of the *Index Medicus* gathering the special publications concerning it under a special section heading. The coincidence of acute appendicitis and extra-uterine pregnancy is sufficiently rare to justify giving it special attention when it comes under observation, and to attach considerable interest to a report of any such case.

The occurrence of this condition is probably much more frequent than the number of recorded instances would lead one to suppose. There are two reasons for this: one is that antemortem diagnosis of both appendicitis and ectopic gestation is a comparatively modern accomplishment, so that we can hardly expect to find any literature concerning it before the commencement of the present century; the other that the diagnosis of acute abdominal conditions often offers great difficulty in differentiation, and the conditions found at laparotomy are often so confusing as to make the surgeon uncertain as to their etiology, and proper facilities for study not being at hand the careful examination of the pathological tissues is impossible.

There is another interesting aspect to the question, namely, the relation that the inflammatory process in the appendix bears to the existence of the tubal pregnancy. Inasmuch as we know that inflammation is set up in the appendix by some form of irritant, it is easy to reason that the rupture of an impregnated tube would provide this irritant, and that appendicitis might be expected to occur in the presence of a ruptured ectopic gestation. On the other hand, the existence of a diseased appendix might favor the occurrence of tubal pregnancy, as is explained by Hammond in discussing his case: "There is no doubt, therefore, in my mind, that a morbid change within the appendix, causing it to become adherent to the fimbriated extremity of the Fallopian tube and thereby arresting the function of transmission of the ovum through the tube to the uterus, was the cause of this extra-uterine fetation."

A careful examination of the literature for the past twenty-five years has resulted in the collection of but *ten* reported cases of coincident appendicitis and ectopic pregnancy. The rarity of such reports is perhaps reflected in the comment of Landau,[6] who begins her article with "the following case is, to my knowledge, unique," although the year 1922 in which she made this statement saw the publication in the United States of one almost identical, and, as I have already mentioned, eight others had previously been published. A brief resume of these published cases may therefore not be without interest.

The first case we have been able to find is that of Black,[2] reported in June, 1897. His patient was aged 22, and when first seen had been ill a week with what had been diagnosed as "unusually painful menstruation," for which morphin had been administered. There was a temporary lessening of the pain but the temperature continued high for four days, at the end of which time

there was an attack of most severe pain with all the symptoms of collapse. Laparotomy was performed under the diagnosis of ruptured gangrenous appendix. On opening the abdomen the hemorrhage revealed quickly made clear the true cause of the sudden collapse, but on removal of the ruptured tube and its contents, "the appendix came into view and showed unmistakable inflammation."

In November, 1897, L. J. Hammond[4] reported to the Philadelphia Obstetrical Society the case of a mulatto girl, aged 22, who entered the hospital because of constantly more frequent recurring attacks of colicky pain with increasing tenderness over the inguinal region. The temperature was ranging between 100° and 103°. Soon after entrance there was an attack which gave every classic evidence of acute appendicitis. The woman was prepared for appendectomy, but before the arrival of the surgeon, the temperature suddenly declined below normal and there was an appearance of profound shock. The abdominal cavity being opened it was necessary to mop out an abundant hemorrhage, after which came the discovery of a "large ruptured tube with the vermiform appendix firmly adherent to the fimbriated extremity of the Fallopian tube and both bound down to the abdominal parietes."

The operative procedure was much complicated by the necessity of removing numerous "islands of placental tissue, united to each other by fibrous bands" which were scattered over the posterior portion of the body of the uterus and the peritoneal surface of the rectum. As in the preceding case, recovery was uneventful and complete.

Two cases were reported by Temoin.[12] Both patients had previously suffered typical attacks of appendicitis, and when seized with severe abdominal pains the existence of this history put all idea of a possible ruptured tubal pregnancy out of the attendant's mind. Temoin is inclined to believe that the previous attacks of appendiceal inflammation may have produced the conditions favoring extra-uterine fetation. Menstruation had in both cases taken place as usual, and the only symptom which pointed toward involvement of organs other than the appendix was the pale and anxious facial expression, so typical of peritonitis. This, the author says frankly, should have given him a valuable diagnostic clue. He does not hesitate to give a full account of his mistakes. In the first case he began by incising the peritoneum, but encountering a mass compactly covered by extremely thick omental tissue, which looked to be difficult, if not impossible of dissection, he decided to evacuate the mass by way of the vagina, believing it to be a purulent salpingitis. He therefore closed the abdominal wound and incised the right cul-de-sac, but, "to his great surprise, nothing came away but a few clots," although the abdominal mass was of "enormous" dimensions. Nothing daunted, however, he returned the patient, now "extremely feeble," to her original position on the table, resterilized everything, and executed a median laparotomy, this time being rewarded by the demonstration and triumphant removal of a "voluminous hematosalpinx on the right" to which the appendix was adherent. The appendix was greatly enlarged and the left tube likewise swollen and filled with clots. The operative work was concluded by removing uterus and adnexa entire, so that although the patient recovered she found herself at the age of 22 childless and completely sterilized.

As Temoin's second patient was seen six months later, he had opportunity to profit by his first experience, and his first incision enabled him to find and remove a three-months fetus which lay in a pocket which appeared to be a diverticulum of the right tube, and to which the enlarged and inflamed appendix was firmly adherent, so much so that it made a "continuous mass" with it. In 1912 one of these cases of Temoin is cited as an example of how extra-uterine pregnancy may complicate and confuse the diagnosis in acute appendicitis, Fesq[3] making use of it in his Paris thesis. We found no other examples of coincident ectopic gestation and appendicitis in French literature.

A Swiss case, reported in German, is that of Sutter, published in 1906.[11] The patient was twenty years old and had had two previous normal pregnancies. She entered the hospital because of abdominal pain and difficult and painful urination. The last menstruation had occurred eight weeks before. The condition rapidly growing worse, operation was undertaken, and when the abdomen was incised, the appendix was found to be much swollen and congested and adherent to the right tube, where ectopic gestation had taken place. The chief interest of the author,

however, seems to center in the finding of a foreign body in the appendix, the location and appearance of which he describes at great length. Under microscopic examination the foreign body proved to be a white peppercorn. The patient recovered.

In a general discussion of the possibility of two or more serious surgical conditions occurring simultaneously in the same patient, Shoemaker[9] of Philadelphia reported an extra-uterine pregnancy associated with appendicitis, which occurred in a woman of 41, whose last pregnancy had taken place 14 years before. Rupture of the left pregnant tube had probably occurred two weeks before she was first seen by the author. There had been much rectal bleeding for two months and the symptoms had been so mixed, including bleeding from the bowel and vagina, severe pain in the left abdomen chiefly and abdominal soreness and chronic indigestion, that attention had never been definitely fixed by her physician upon the appendix region, and an attack of moderate severity had doubtless passed over before the ruptured extra-uterine pregnancy occurred. At operation the left tube was found ruptured near the attachment of the broad ligament, and many ounces of free blood and clot were present in the peritoneal cavity. The tube was removed, leaving the corresponding ovary. Examination of the appendix showed a hard meso, half an inch thick, the appendix walls dusky red, hard, thick and rigid, the mucous coat purple, but no pus present. This was also removed, and the patient made a good recovery, not only from the surgical condition but from the troublesome chronic indigestion which had been present for years.

Stewart explains his case, reported in 1913,[10] in this way: "An old-standing appendicitis (the appendix extending to the left side) had set up an inflammation and formed adhesions around the left broad ligament. An extra-uterine pregnancy had taken place in the Fallopian tube on the left side, and had ruptured in about six weeks, causing the collapse and swelling from the resultant hemorrhage, which was limited by adhesions formed as a result of the appendicitis." The patient had suffered from abdominal pain for more than a year, but the acute attack of pain which caused her to seek medical aid had taken place only two days before. As there was a profuse and offensive vaginal discharge and the breasts were enlarged a curettage was done, but though the discharge ceased milk could be expressed from the breasts, the temperature was subnormal and there was extreme pain. Under the diagnosis of extra-uterine pregnancy the abdomen was opened, the operator finding "not only the expected sac, but also the appendix and a loop of small bowel, these both being inflamed. There was also a large clot of blood." The operation was completed "by removing the sac, the left Fallopian tube, the appendix and the clot, and by stitching up the loop of bowel which had been slightly torn in separating it. The patient made an uneventful recovery."

Another English case is that of Richardson,[7] which is of especial interest in that the author could obtain no history of previous attacks of appendicitis. "The patient"—aged 24 and two years married, though not previously pregnant—"was a healthy looking girl, who complained of pain in the lower part of her abdomen, coming on at intervals; the pain was more on the right side than on the left." There was a tender swelling on the right side of the uterus, upon which even slight pressure caused much pain. Two hours after the first examination the author opened the abdomen, and on dividing the peritoneum, "a little straw-colored fluid escaped, but no blood. The appendix was found inflamed and dilated; it was, on opening it after the operation, found to contain pus." When the operator put his hand into the abdomen to examine the right tube and ovary, "some dark-colored blood welled up. The tube was found to be dilated to the size of a small hen's egg; it was ligatured and removed." There was a good recovery.

A third English case is that of Landau[6] to which reference has already been made. The patient was forty years old and had two previous pregnancies, the first producing a normal child, and the second a carneous mole. There was no extended history of abdominal pain, and when first seen by the author the general condition was good. In view of the activity of the breasts and the presence of uterine bleeding a diagnosis of ectopic gestation was made, but the existence of a tender swelling on the right side of the pelvis also suggested appendicitis and

salpingo-oöphoritis. When the abdomen was opened the uterus was found displaced to the left by the swelling on its right. "This swelling was roofed in by two coils of small intestine and omentum. The intestines were packed off with gauze mattresses and the separation of the adherent bowel begun. During these manipulations foul smelling pus escaped from the swelling. It was mopped away and the true condition of affairs disclosed—vis., the appendix lying in an abscess cavity behind and below the right Fallopian tube, the isthmial portion of which was dark-red in color, enlarged to a diameter of nearly two inches, and occupied by a mole." The outer portion of the tube was removed and the sac cut away from the uterus, to which it was adherent. Recovery was uninterrupted.

The author believes the points of interest in this case are:

1. The simultaneous occurrence of two acute abdominal conditions apparently entirely independent of each other. The question as to which was the primary lesion is obscure. Probably the ectopic gestation was of longer standing than the appendicitis, the symptoms being latent until the superimposed appendicular inflammation hastened changes in the gestation sac, with the result that uterine bleeding began. The left tube appeared to be healthy, and in accordance with the bilateral tendency of salpingo-oöphoritis it is reasonable to assume that the right tube was free from any old-standing inflammation, and the infection of the appendix was not secondary to any tubal condition.

2. The difficulty in diagnosis of tender swelling in the right side of the pelvis, associated with a mild pyrexia. The absence of nausea, vomiting and abdominal rigidity seemed to negative the diagnosis of appendicitis, though the pelvic type of appendicitis is often atypical in its signs and symptoms.

The only case I have been able to find in which the diagnosis of coincident appendicitis and ectopic pregnancy was made previous to operation, is that Ruth,[8] reported at the annual meeting of the American Association of Obstetricians in 1921. The patient was 23 and had previously had an abortion, from which recovery had been without incident. After passing one menstrual period she had an apparent attack of appendicitis which was accompanied by what was taken for a slight menstrual flow. She recovered from this attack, but a month later had a most violent seizure, going into profound shock. When brought to the hospital the next day, the shock had largely passed and the temperature risen to 101. "Presumptive diagnosis of ruptured tubal pregnancy and acute appendicitis was made. Median incision below the umbilicus revealed the upper abdomen filled with pus, the lower abdomen and pelvis containing a large amount of partly coagulated blood. The right Fallopian tube was found to be ruptured. It contained a placenta with attached cord and a three inch fetus. The pus in the upper abdomen came from a rectocecal appendix which was covered with a thin film of exudate. There seemed to be no attempt at limitation of the infection by adhesions of omentum or intestinal loops."

Treatment after operation consisted in part of continuous proctoclysis, with the patient in a sitting posture well inclined to the right. Recovery though somewhat slow, was without incident. The author regards the use of the Fowler position which aids drainage and prevents infection from gaining contact with the open-mouth lymphatics of the upper abdomen, as an important adjunct in this favorable outcome.

REFERENCES

1. Beven, A. D.: Ruptured extra-uterine pregnancy-confusion with appendicitis. Surg. Clin. Chicago, 2: No. 5, 65, Feb., 1918.
2. Black, C. E.: Appendicitis complicating extra-uterine pregnancy, Ann. Gynec. and Pediat. 10: 525, 1896-7.
3. Fesq, Joseph: Grossesse extra-uterine et appendicitis. These de Paris, 1911-12, No. 51.
4. Hammond, L. J.: Extra-uterine pregnancy with involvement of the appendix vermiformis. AM. Gynec. and Obst. J., 12:82, 1898.
5. Hare, E. R.: Appendicitis, diverticulitis, and ectopic pregnancy, with special reference to differential diagnosis. Minnesota Med., 4:714, 1921.
6. Landau, M. E.: Ectopic gestation complicated by suppurative appendicitis. Lancet (London) 1: 793, April 22, 1922.
7. Richardson, W. S.: Acute appendicitis complicated by tubal pregnancy. Guy's Hospital Gazette (London), 30:403, 1916.
8. Ruth, Chas. E.: Coincident ruptured ectopic gestation and acute suppurative appendicitis. Am. J. Obst. and Gynec. 3:525, 1922.
9. Shoemaker, G. E.: Appendicitis with ruptured extra-uterine pregnancy. Trans. Philadelphia Acad. Surg., 10:263, 1908.
10. Stewart, Robert: Appendicitis complicating extra-uterine pregnancy. British M. J., 1:1321, 19.
11. Sutter: Ein Fall von Appendicitis infolge eines Pfefferkorns bei Extrauteringravidität. Cor. Bl. f. schweitzer Arzte, 36:284, 1906.
12. Temoin: Appendicitis et grossesse extra-utèrine avec-inondation pèritonèale. Assoc. franc. de chir. (Proc. verb.) 16:781, 1903.

DISCUSSION

Dr. J. R. Harger, Chicago: I would like to stress a few points brought up in the paper and to cite a case similar to what the doctor has just based his discussion on.

I believe in some of these cases that ectopic pregnancy is brought about by appendicitis. I am satisfied that a great many cases of appendicitis associated with

ordinary pregnancy as well as ectopic are caused by pregnancy. I have seen several cases of normal pregnancy associated with acute appendicitis but in every one of these instances, however, the appendix was not located in the normal position but extending over the brim of the pelvis and down to the pelvis. The onset of pregnancy seems to cause a re-establishment or a lighting up of the old trouble in the appendix. Let me briefly cite a case that happened in 1913.

A woman of 23, normal in every way, with no previous history of appendicitis or pregnancy, believed herself to be pregnant. She went along to the third month and then had the typical symptom of the onset of a ruptured ectopic. I did not see the patient until five weeks after this rupture. At that time she had in the right side slightly lower than McBurney's point a mass the size of a fetal head. A diagnosis of ruptured ectopic pregnancy was made and it was a question whether or not there was an associated appendicitis. On opening the abdomen we found a very interesting thing. This patient had had a ruptured ectopic pregnancy and after rupture the ruptured membranes had closed and the liquor amnii had continued to form, producing a mass the size of a fetal head. On the superior surface of this mass was the appendix much larger than my thumb which undoubtedly had been the site of an old inflammation. It was firmly adherent to the mass and of course this whole inflamed mass was intimately associated with the cecum. Without too much disturbance to the surrounding tissue the entire mass was removed in toto. The stump of the appendix was first ligated, then the right tube and ovary with the placenta was removed in the mass. In the cul-de-sac were large blood clots covered over with fibrin and containing a fetus of about three months. I believe in this case the ectopic pregnancy was due to the condition of the appendix because since that time this woman has given birth to four boys normally, the right tube and ovary being absent.

Dr. Andy Hall, Mt. Vernon: In listening to the Doctor's paper I noted that his patient gave a history of appendicitis eight years previously and four years previously. We know that anything that causes pelvic inflammation that would in any way cause a pathologic condition of the tube is a potent cause of ectopic pregnancy. In the April issue of the ILLINOIS MEDICAL JOURNAL is an article by one of the Philadelphia surgeons, John B. Deaver, in which he points out that the appendix is one of the potent causes of ectopic pregnancy. I think that was quite likely the cause in the Doctor's case.

The diagnosis of ectopic pregnancy is rare but ectopic pregnancy is not so rare as we thought years ago. A few years ago I had occasion to look up the literature on that subject. And in the reports from Johns Hopkins University it was stated that of the pregnant women examined in that institution one out of every 92 was an ectopic. The reports from the Leland Stanford University showed that one out of every 152 pregnancies was an ectopic. In other words, ectopic pregnancy is about as frequent as is twin pregnancy. There are a great many physicians who have practiced medicine many years who have attended several cases of twins, but you will have a great many physicians who have practiced medicine for 20 or 30 years who will tell you that they have never encountered a case of ectopic pregnancy. It is one of the things that should always be thought of in every case of acute pain in the abdomen in women of child-bearing age. Often the diagnosis is made correctly, but more often it is diagnosed as acute intestinal colic, ovarian inflammation, appendicitis, or salpingitis—never thinking it might be an ectopic pregnancy.

Dr. Mather Pfeiffenberger, Alton (closing the discussion): In answer to Dr. Hall's discussion, there was no pathology in the tubes or ovaries. It was a case of acute appendicitis with rupture and an adherent omentum on top of the pregnancy in the cul-de-sac. Though I reported this case as an ectopic it was in fact an abdominal pregnancy, there being no connection between the pregnancy and tubes or ovaries. I am satisfied that if the acute appendix had not developed the patient would probably have gone on to a complete development of an abdominal pregnancy.

Dr. Harger's case was somewhat similar to my case, but he had pathology in the tube. The striking thing to me, as I have stated, is that there was no connection between the tubes and ovaries and the pregnancy and the condition of acute appendicitis engrafted on it.

REPORT OF A RARE BENIGN TUMOR PEDICELLATED TO UNDER SURFACE OF UPPER LID*

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Mr. G. H., aged 70, called at office, April 26, 1923. History: For some months previously the left eye had been blurring, especially when reading; but after rubbing the eye would clear up to some extent. There was no discharge, inflammation or pain. Family history somewhat suspicious but not positive. Examination of eye was negative in all respect except upon inversion of upper lid, I found a small symmetically round growth or tumor attached to conjunctiva about the middle of tarsus with reference to both the horizontal and perpendicular diameters of tarsus. The tumor was about 7 mm. in diameter, disc-like in form, very thin in its periphery, conforming perfectly to the concavity of the lid's surface and in immediate contact with same. It was attached to the conjunctiva of lid by small pedicle about 1 mm. in diameter. The growth was removed by a small soft thread of wire snare

*Read before Section on Eye, Ear, Nose and Throat, Illinois State Medical Society, Springfield, May 6, 1924.

and the point of attachment was cauterized with silver nitrate.

The recovery was complete and uneventful, the point of attachment becoming smooth and normal in about three weeks. The color of the growth conformed to that of the lid's surface, and it was covered with what seemed to be normal conjunctiva. There was no pathogenic membrane or any evidence of infection in tissue of growth.

When we consider the great variety of tissue of which the lids are composed it is not difficult to account for the great number and wide variation in the character of tumors which may develop from this structure. The classification, description and differentiation of eye lid tumors are too lengthy to come within the scope of this paper, and therefore I will make no attempt to cover that phase of the subject further than to state that, so far, I have been unable to find anything in medical literature which simulates the growth which I have described, and this is my apology for making this report.

Following are the only cases I find reported that approach to any degree whatsoever and, they, in fact are very dissimilar:

James and Trevor (Brit. Jour. of Ophth., Vol. ii, page 129) report two clinical histories of hemangioma of the palpebral conjunctiva. They were perpendunculated, slightly lobulated, tumors, but the growth which has been described was a pedicellated tumor. According to The American Encyclopedia of Ophthalmology, page 10253, Vol. XIII, and page 3056, Vol. IV, polypi of conjunctiva are more commonly found in children and usually caused by the irritation of a foreign body. This growth possessed none of the characteristics of a polypus.

I believe this growth was a direct sequela of an old chronic chalazion which perhaps existed years previously; the chalazion broke down and its exudates found their outlet through the tarsus beneath the conjunctiva, the exudates detaching the conjunctiva at the point of the pedicle, the pressure of lid flattening it out; finally the natural processes destroyed the infective material and the exudates became regenerated in the tumor to healthy tissue. Funchs regards a chalazion as being a peculiar chronic inflammation which produces granulation tissue which may contain giant cells. In conclusion, I will state that some months ago I made a short verbal report of this case to the Chicago Ophthalmological Society. I beg leave to designate this growth as a benign pedicellated noncapsulated disc tumor of the conjunctiva of the upper eye lid. Unfortunately this growth was lost and an examination of structure could not be made.

SOME FACTORS IN RADIUM TREATMENT

R. Carter Crain, B. S., M. D.
CHICAGO.

The type, location and condition of a malignant cell growth, the mode of application and the dosage, are important factors in the ultimate reaction of the tissues to radium.

Neoplasms made up of rapidly dividing cells are more radiosensitive than those composed of adult cell types. The cells of epithelium, for instance, are fairly resistant as compared to those of the ovary and testis, as first shown by Albers-Schonberg.[1] In the skin, the cells of the germinal layer, hair papillae, the sebaceous and sweat glands, and the endothelial cells of the blood vessels, are radiosensitive; while elastic and collagenous tissue, hair, etc., is only slightly susceptible.

The location, lymphatic drainage and blood supply of tumors, renders attack sometimes difficult and prognosis unfavorable. For example, a squamous cell epithelioma of the esophagus is far different from the same kind of a lesion situated on the lower lip; the former has a mortality of 100 per cent., while the latter shows a five-year cure of at least 60 per cent. Esophageal neoplasms, due to their inaccessibility, render any form of treatment difficult. Formerly radium was looked upon as offering much in these cases, but of later years we have come to regard it here, as unsatisfactory. It was not the awkward technique of application which changed our opinion, but the effect on the mediastinal structures, when a sufficient dose was given to kill the neoplastic cells. In the author's experience with radium, every case but two, died as a result of a mediastinitis.

The condition of the tumor, its extent and glandular involvement, the presence or absence of pressure symptoms, whether or not radium or x-ray has been used, all bear directly upon

the question of how much and how often treatment should be given. It is a well recognized fact that tumors are most susceptible to the primary radiation. Subsequent treatments are much less effective and this is considered by some theorists to be evidence of an immunity reaction, wrought by some change within the cells.

Radiation of tissue by imbedding bare needles or tubes, that permits the escape of the soft and medium hard beta rays, which are very caustic, leads to a necrosis for a distance of ¾ to I cm. from the tube depending upon the amount of radium and the time applied. This area of necrosis takes place regardless of whether the tumor is a resistant squamous cell epithelioma, or one of susceptible embryonic character with many mitotic nuclei. Beyond the field of necrosis, if the tumor is a susceptible one, will be found swelling, vacuolation and solution of the cytoplasm of the cell and swelling hyperchromatism, vacuolar degeneration and fragmentation or solution of the nuclei. If, however, the neoplasm is one of a resistant type, the autolytic process just described will be less marked, and in order to deliver a lethal dose, the radium container must be moved about to give a heavy homogeneous radiation. This area of autolytic change gradually merges distally, with a third zone, which is usually from 3 to 5 cm. distant from the focus of the radium tube. The cells here receive only the gamma rays, and at this distance it is a question whether the rays exert a restraining or stimulating action on the growth. Here again it seems probable that the type of cell must be considered. Ewing[2] has explained this seeming enlargement of tumors, sometimes observed after radiation, as due to hyperemia, exudation, degeneration or infection, and he states he has never been able to find anything that could be interpreted as a stimulation of tissue growth by radiation.

Screened applications of radium above the skin are unsatisfactory for anything but the most superficial lesions, and certainly have no place in the treatment of deep tumor masses. If a sufficient dose was delivered, even 2 cm. beneath the skin, to have a destructive effect on malignant cells, the skin would suffer considerable damage. Dean[3] has found that radium, screened with 2 cm. distance, 2 m.m. brass, and 2.4 m.m. rubber, will produce an erythema of the skin with a dose of 800 mgm. hrs. Schmitz,[4] using a 50 mgm. tube of radium in a water phantom, estimated the erythema skin dose at 1 cm. distance as 1200 mgm. hrs. A greater dose than this delivered at the skin is apt to lead to bleb formation, ulceration, and very slow repair. It has been claimed that carcinoma cells are twice as sensitive to radiation as normal epithelial cells.[5] Assuming this to be true; whether we calculate the depth dose by the inverse square of distance and absorption law or by the method described by Kroenig and Friedrich,[5] we still are unable to give a lethal tumor cell dose at any great distance. Furthermore, the attempt to lay down a set rule for the estimation of radiation penetration, while physically sound, is not biologically sound. There are several factors of present unknown value to be taken into consideration.

The chemistry of irradiation has so far been undetermined, although it probably plays an important role. Considerable work has been done on the blood and in this connection should be mentioned Tryfus.[6] He has shown that if a malignant tumor is radiated and the blood of the patient taken during the reaction and injected into another patient suffering from cancer cachexia, the latter will show a marked improvement. Investigations have also been made on amino acid retention, calcium ionic dissocation, collodial dispersion, and cellular ferment activation, but so far no conclusion can be reached.

Another little known phenomenon to be considered is that of secondary radiation. The amount and distribution of the secondary rays within the tissues may have no little bearing on their action. These rays possess varying intensities, depending upon the atomic weight of the media through which they pass, and have been described as of three kinds. 1. The Scattered Rays, which possess the same physical properties as the exciting ray. 2. The Secondary Beta Ray. This is a corpuscular radiation composed of electrons moving with great velocity. 3. The Secondary Characteristic Ray, which does not resemble the primary exciting radiation but is solely characteristic for the substance in which it is excited.

The reaction also varies with the factors of time and the amount of radium used. For example, 1000 mgms. of radium applied to a tumor for one hour, will not have the same effect as 100 mgms. applied for ten hours, or 10 mgms.

applied for one hundred hours. Yet in each case, the dosage, as we calculate it in milligram hours, is the same. Regaud[7] has demonstrated in his recent work on radiation of testes that a large amount of radium applied a short time will lead to a central necrosis, but many of the cells near the periphery will not be sterilized; whereas, a smaller amount, extended over a longer period, will lead to little or no necrosis but a complete sterilization of all the cells.

With these several points of radiation treatment in mind, one should realize that each case must be individualized. A given amount of radiation might restrain a growth in one case and produce no visible change in another. The tolerance and reaction of both the patient and tumor must be taken into account.

Conclusion:

1. The location as well as the nature of a neoplasm has an important bearing on the treatment.

2. All deep seated masses should receive intratumoral, rather than external radiation.

3. A sufficient dose must be given to destroy the tumor cells.

4. A large amount of radiation extending over a short period of time does not have the same effect as a less amount extended over a longer period.

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REFERENCES

1. Albers-Schonberg: Uber Eine Bisher Undekannte Wirkung Der Rontgenstrahlen Auf Den Organismus Der Tiere. Munchen med. Wchnschr. 1903 i-1859-60.
2. Ewing, J.: The Influence of Radiation Therapy on the Study of Cancer. Canad. Pract. Toronto, XLIX Mch. 1924. 95-104.
3. Dean, A. L. Jr.: The Erythema Dose of Radium. Amer. Jour. Roent. Vol. IX No. 6 Aug. 1923. 72-74.
4. Schmitz, H.: Technique and Statistics in the Treatment of Carcinoma of the Uterus and Contiguous Structure with the Combined Use of Radium and X-Rays. Amer. Jour. Roent. Vol. XII No. 10 Oct., 1922. 662-670.
5. Kroenig and Friedrich: The Principles of Physics and Biology of Radiation Therapy. Rebman & Co., New York. 1922.
6. Tryfus, E.; Ueber Die Wirkung Parenteraler Zufuhr Von Blut Und Organbrei Nach Hohensonnen-Bestrahlung Auf Das Blut Unbestrahlter Tiere. Klin. Wchnschr. Berl., 1923. ii 694.
7. Regaud, C.: Some Biological Aspects of the Radiation Therapy of Cancer. Amer. Jour. Roent., Vol. XII, No. 2, Aug., 1924. 97-101.

THE GROWTH OF NATIONAL POWER*

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At no time since 1787 has it been more important than now to re-examine the relationship between state and national power in the United States. Since the foundation of this government there has been a steady increase in national powers and activities; but not until recently has this increase endangered the efficiency of the national government and the existence of the federal system.

National power has steadily increased through (a) the broad judicial construction of the constitution of the United States; (b) the amendment of the United States constitution; and (c) the more complete exercise of its authority by the nation. These three factors are merely parts of a common development, for broad judicial constructions have come as the result of conditions seeming to demand that the United States itself exercise broad powers; and constitutional amendment has been forced by conditions seeming to require that new lines be drawn between state and national power as to matters where desired results were not or could not be accomplished by judicial constructions.

Early in the history of this country the United States Supreme Court established its power as the authoritative interpreter of the constitution; as the final arbiter for the determination of the line separating national and state powers under the terms of a written document. Into this judicial function has gone statesmanship of a high character.* As an organ of the national government, familiar with the needs of that government, this court throughout the course of its history has been favorable to constructions supporting national power; but has at the same time protected the federal system. Under Chief Justice Marshall the court laid firmly the foundations of national power, but in doing so restricted too severely powers which the states must continue to exercise. Under Taney the court somewhat moderated the undue severity of previous decisions, but without reducing national authority in any material respect. On the whole the court's attitude has been consistent and recent decisions show a desire to permit proper extensions of national power while protecting the states as units in the federal system.

The national government has increasingly come to exercise the powers vested in it under the constitution of the United States. In the days of the stage coach and the sailing vessel, there was little possibility of a developed and elaborate system of interstate commerce. With the development of rapid means of transporta-

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tion and increased ease of communication, interstate commerce has become increasingly important. With the development of this commerce, national power has increased step by step with the enormous increase in the transactions to be controlled. And the increased complexity of these transactiosn has necessarily forced a more complete exercise of this power.

At the time when the issue first presented itself, it seemed proper for the United States Supreme Court to hold that the admiralty jurisdiction of the federal courts extended only to the waters in which the tide ebbed and flowed. But with the development of the steamboat, such a doctrine became a bar to progress, and was discarded in the case of *The Genesee Chief v. Fitzhugh*. Had the United States Supreme Court not changed its original attitude, steam transportation on the waterways of the United States would be subject to federal regulation in parts of many streams, and to state regulation in other parts. This situation would have been difficult and dangerous. Constitutional amendment would soon have become necessary, had the court not wisely abandoned the view of an earlier day.

With the development of interstate commerce by railroad it has become increasingly necessary that the United States government assume practically complete authority over the regulation of interstate carriers by land, just as in an earlier period it became necessary by judicial construction to extend the federal authority over substantially the whole field of commerce by water. The chief steps in this extension of national authority over railroads may be traced in *Southern Ry. v. United States*, the *Shreveport* case, and *Railroad Commission of Wisconsin v. C., B. & Q. Ry.* Railroad transportation is necessarily a problem national in its scope, and the recent decision rendered through Chief Justice Taft is as necessary a development with respect to that transportation as was the case of *The Genesee Chief* in 1851. Intrastate rates bear such a close relationship to the regulation of interstate rates that the final step taken in the *Wisconsin Railroad Commission* case was necessary in the proper development of national authority.

Other tendencies in judicial construction, however, presented dangers to the federal system. Pushed to its logical extreme, the view taken in the *McCray and Doremus* cases would have been destructive of state power. If the United States government could, by levying a tax or something in the name of a tax, take under its control matters otherwise not under the authority of the national government, no limit would exist as to national authority to encroach upon state activities. For this reason Chief Justice Taft and his colleagues took the proper view in the recent cases of *Bailey v. Drexel Furniture Co.* and *Hill v. Wallace*. The court was clearly right in its statement that the taxing power "must be naturally and reasonably adapted to the collection of the tax, and not solely to the achievement of some other purpose plainly within the state power." However much one may sympathize with the desire to abolish child labor throughout the whole territory of the United States, such abolition would be purchased at too dear a price, were it accomplished by the destruction of the powers of the states. It is interesting and characteristic that the United States Supreme Court at the same term and through the same spokesman should have declared invalid the federal tax upon child labor; and have sustained federal authority to control intrastate rates of railroads as incident to the regulation of interstate commerce.

The judicial function of interpreting the constitutions is steadily in use. Constitutional amendments are much less frequent, and only since the Civil War has there been a tendency to increase national power through changes in the text of the constitution itself. The Fourteenth Amendment to a large extent nationalized the protection of individual rights. The Fifteenth and Nineteenth Amendments substantially (though not in legal theory) took over as a matter of federal control the regulation of the right to vote both for state and for national offices. The income tax amendment, by giving to the national government a large additional source of revenue, has made it possible for the nation to embark upon a system of subsidies to the states, through which the nation has come to a large extent to determine state policies as to education, highway construction, and other matters. Through the popular election of United States senators, established by amendment to the constitution of the United States, the states as such have become less important organs in the operation of the federal system. The prohibition amendment has transferred to the national

government responsibility for the enforcement of an important policy of police regulation.

It has been suggested that national power has increased by means of constitutional amendment, constitutional construction, and the more complete exercise of its recognized powers by the government of the United States. These three developments are so closely interwoven that the effect of one upon the other cannot be separated. The national government has not sought to exercise its powers fully until conditions have developed requiring such exercise. The regulation of commerce by water came with the development of the importance of such commerce. The regulation of interstate commerce by land began in 1887, and has extended with the need for the federalization of the control of that commerce. The same is true of the development of the postal system and of control over migratory birds.

The more complete exercise of national authority has naturally come only with the demand for new federal functions. Broadened constructions of national powers by the courts have also come only when the needs of the situation have forced and justified such constructions. Amendments to the constitution of the United States have come slowly and only as they have seemed to be necessary to meet new needs. With the increase of national authority and an increased national consciousness has naturally come a tendency to saddle new burdens and responsibilities upon the nation. It is easier on the whole for those in favor of a particular reform to obtain federal legislation for the country as a whole, than to make their views prevail through the actions of forty-eight separate state legislatures. It is in some cases easier to obtain an amendment to the constitution of the United States than to obtain the success of movements through separate state jurisdictions.

It is impossible to draw any definite or permanent line between national and state functions. Railroad regulation began with the states, and has properly tended to come under national control. The line separating state and national functions must and will shift. In the readjustment of functions as between state and nation, the United States is but doing what is going on in other federal systems. In Switzerland there has been a steady tendency toward the enlargement of federal powers as against those of the cantons, though little of value can be drawn for the United States from the experience of a small and compact territory such as that of the Swiss federal republic. In Germany, before the fall of the empire, there was also steady development toward an increase of imperial as against state powers; and this development has been carried still further by the constitution of the present German republic. In Australia, there have for years been efforts to amend the commonwealth act so as to enlarge the powers of the commonwealth as against the states. These efforts at constitutional amendment have failed, but a recent decision of the High Court of the Commonwealth of Australia gives the supporters of increased national authority much for which they fought.

The most recent increase of national authority in the United States has been through subsidies to state and local governments. Congress appropriates a large sum of money to be distributed among the states, the states or their local communities meeting federal appropriations by an equal sum, and being controlled to a large extent by federal law and federal administrative regulations in the expenditure of the money so obtained. With respect to agricultural education, vocational education, highway construction, and maternity and infant welfare, a definite system of federal subsidies has been built up; and constant pressure is being placed upon Congress to establish new plans of the same character.

National subsidies are limited only by the extent of federal revenue, and by the limits if any upon the persistence with which new subsidy schemes are urged upon Congress. With respect to matters judicially cognizable, the Supreme Court of the United States may be relied upon to protect state powers. But no organization exists for the restriction of the evils of the subsidy plan. The development of this plan is dangerous to the national treasury; but in favor of any proposed subsidy it is possible to organize a mass of state and local pressure not capable of effective political resistance. Unfortunately neither state governments nor their local subdivisions can be expected to resist encroachments upon state and local authority through the subsidy plan, for governments are usually willing to surrender control over policy in return for additional and immediate revenue.

No function national in its character will remain permanently under the control of state

and local authority, nor should it so remain; but any development which may without limit supersede state authority is dangerous both to the nation and the states. When a problem is national it must be dealt with by the nation, and to meet it the nation may often have to readjust its administrative and judicial organization. A national policy once adopted must be efficiently enforced. National prohibition found the federal government unprepared for enforcement, though recent judicial reorganization may in part remedy this situation.

Though the nation must and will finally deal with problems of a national character, the presumption must be against the assumption of a new national function, unless it may be clearly recognized as one properly to be withdrawn from state and local control. This view is not based upon theory, but upon the need for efficient enforcement of governmental policy. The undue assumption by the national government of detailed governmental tasks leads to inefficiency because (a) it makes the federal administration less effective, (b) it removes a feeling of local responsibility for law enforcement.

A governmental organization may readily become so large as to be inefficient, and the danger of this is the greater if the government controls a wide expanse of territory and governs a large number of people. State governments are perhaps now less efficient than the national government, though this statement may be challenged. Yet the national government has tended to become less efficient as it has assumed new and diverse functions, to be performed in detail throughout the whole country.

Not only this, but when responsibility for a policy is transferred to the national capital, the interest and responsibility of local governments is to that extent reduced. The establishment of national prohibition has in some respects weakened not merely the respect for law, but the enforcement of law, because weakening the responsibility of other governments. A community enforcing prohibition within its borders as the result of a periodical local option vote had more feeling of responsibility for law enforcement than if the duty is upon a distant government. Some specific local interest in law enforcement is necessarily lost when the determination of a policy shifts first from the locality to the state, and then from the state to the nation.

No one sympathizes with lynch law in any portion of this country; and every citizen desires that effective action be taken to punish those engaged in mob violence. Yet the proposed congressional legislation seeking to a large extent to turn over to the national government responsibility for the prevention of lynching and for the punishment of those engaged in such unlawful acts is of doubtful wisdom. The national government is remote in many ways from the individual citizen, and the more tasks of local government which it undertakes the less effectively will it be able to perform the important function for which it was established. The Dyer bill, if passed (as is now doubtful), may in many cases accomplish good by bringing to justice leaders of mobs who would otherwise go unpunished. But the efficient enforcement of law in this country depends not upon the national government but upon the states and upon local governments; and an effort to have the national government take over the responsibility in this respect may in the long run lead to worse conditions by relieving the states and the localities from direct obligations which they should bear.

Whether a policy be local, state, or national, its effective enforcement must in the long run depend upon local sentiment and a feeling of local responsibility. Local sentiment and local co-operation are the more difficult to develop, the farther the control of and the responsibility for law enforcement is removed from the communities themselves. The steady overburdening of the national system will break down the efficiency of that system, and will necessarily result in less adequate enforcement of the policies determined upon. From the standpoint of the supporters of a particular policy, it is possible oftentimes to get a prompter legal recognition of that policy through the national government than through the states; but the transfer of control over that policy from the smaller to the larger area of government may in the long run defeat many of the purposes of those advocating the policy. Although proposals of federal action either through subsidies or otherwise may often involve dangers to the federal system and to the very movement sought to be encouraged, yet such proposals are difficult to oppose on their merits, because they seek some immediately desirable results.

In the past national functions have developed

haphazard, and without conscious policy. This development involved no dangers so long as the United States was merely occupying recognized fields of federal power, whose boundaries were subject to judicial delimitation. But there is no body whose duty it is to check new ventures under the plan of federal subsidies. A conscious policy must now be developed as to the future relationships between state and nation, if the two are to be effective, if the national treasury is to be protected, and a truly federal system preserved. No hard and fast line can ever be drawn between functions that are national on the one side and those belonging to the states on the other. But at the present time some lines can be drawn. The national government can never take over and exercise effectively the detailed control of police regulations within the state; and the general administration of civil and criminal justice will long remain with the states. It is now clear that the states rather than the national government may more properly handle such matters as education, highway construction, health, and labor legislation. This enumeration of matters of internal administration may be continued indefinitely.

What is the function of the national government with respect to activities which more properly belong to the states? A subsidy plan leaves the detailed administration to the states but subordinates the policy of that administration to the national government. It appears to leave authority in the states without doing so. There is, however, an important sphere of desirable co-operation between state and nation—an important function of the national government with respect to the state governments themselves, as to which the nation may be highly useful, without encroaching upon powers which it should not exercise.

One of the most important needs of state and local governments is something of standardization and co-ordination. In order to meet its problems, each should be able to call upon the accumulated experience of other states. No one state has the means nor could it effectively set up the machinery for a careful comparative study of institutions in all the states. The national government has to some extent attempted to inform the states about the activities of other states, but little has been done effectively in this field. Each state needs for example to know the experience of every other state in the fields of taxation and budget administration. Through its Bureau of the Census, the United States government actually publishes an annual volume of financial statistics of states, and this volume is of some help to the several states, although its helpfulness may be easily exaggerated. The Bureau of the Census published for a number of years an annual bulletin on the financial statistics of cities of a population over 30,000; and these volumes were also of aid although the activities of the national government in this field as well were not as useful as they might have been.

In the field of labor, the national government has done useful and effective work and has had some real influence upon state legislative and administrative policy. The movement for workmen's compensation has been a rapid one in the states of this country, and within a short period has completely transformed the relationship between employer and employee in the case of accidents. The United States department of labor has performed useful and important services in this connection through the preparation of studies, and through the publication of the proceedings of the International Association of Industrial Accident Boards and Commissions. One of the latest important services performed by this department is a careful and detailed study of workmen's compensation insurance and administration.

In the field of judicial administration and in the enforcement of criminal law, no single state can take an effective leadership in the development of judicial statistics and the careful study of methods of judicial administration. In this field alone national action may accomplish more to aid in the improvement of government than through the passage of a half-dozen Dyer anti-lynching bills.

Even though it be admitted that state governments are less efficient than the nation and that local governments are to a large extent inefficient, the remedy is not to deprive these governments of control over matters of state and local policy; but rather a systematic effort to improve conditions in these governments themselves; for, however much the national government assumes new functions, the effective enforcement of policy will depend upon the sentiment in the states and local communities. Upon the preservation of state

governments depends the continuance of our federal system of government. A concentration of authority in the national capital is sure in the long run to lead to less efficient government, to a high degree of bureaucracy, and to a lessening of the democratic spirit in the national, state, and local governments. The function of the nation in acting as an investigating and co-ordinating agency, and in reporting upon the results of experience in state and local government, is more important than is the taking over of activities which may more properly be handled through local agencies. And the national government may in the long run be more efficient and more of an aid in the establishment of efficient government throughout the nation by means of activities which will aid the states to solve their own problems, than through plans which seek to take these problems from the states themselves. There must be a halt and an immediate halt in the present development of federal subsidies unless the national treasury is to become bankrupt and the state cease to be effective agencies of government in this country. And the national government must cease the assumption of new tasks involving detailed administration unless it is to become highly inefficient.

The national government deals with and must continue to deal with many of the same problems as do state governments. In many cases close relationships now exist between state and national administrations. Such relationships are beneficial to the states where they do not lead to the possibility of national dominance over state policy. Only a few of the cases of federal co-operation and helpfulness are noted above. It may almost be said that so many federal agencies in Washington have relations with state government, that the comparative operation of state governments may best be studied through such agencies, rather than in the states themselves. This would be largely true if the student could know all of the federal offices having relations with the states. Unfortunately the relations between the national departments and the states are scattered and unco-ordinated. If the national government is not itself to take over the functions of state and local government, but is to aid effectively in their performance, it may wisely set up something in the nature of a department of state relations to co-ordinate its own relations with the states and to advise them in their problems.

THE TREATMENT OF GONORRHEA OF THE GENITAL TRACT*

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The subject under consideration, "The treatment of gonnorrhea of the genital tract," with its many and varied complications, has always been a problem of enormous dimensions confronting medical and civic organizations. Gonorrhea has ever been and in all probability will so continue to be a menace to future health and the pursuit of happiness. It is indeed alarming, when one considers the vast hoard of gonorrheacs always present in our citizenry, some seeking medical aid with a firm determination to eradicate the condition, others with more or less indifference, and not a small group who through ignorance obtain no medical assistance.

We know of no greater obstacle confronting the youth of this age than the ravages of the gonococcus and its co-partner, the spirochete of syphilis. Civic, medical and philanthropic organizations in a sincere effort to eradicate or control the venereals, without a question of doubt have accomplished a great piece of work. The spotlight of public attention has been focused upon this hitherto slightly understood dilemma, and out of chaos have arisen many organizations for the care and treatment of the unfortunate venereals. The various clinics, leagues, institutions and so forth, throughout the city, have in many instances rendered aid of inestimable value, while in other cases the so-called institutes and free clinics are organized for none other than personal gain, hiding under the guise of charity.

Cases seeking charity treatment for venereal disease should be carefully followed up, if you please, in order to ascertain their actual status. We firmly condemn the free treatment of cases with venereal infection unless it has been definitely established that they are worthy of charity.

We further feel that an important position still exists for the private practice of urology and venerology, although not a few urologists only with fear and trembling admit that they treat gonorrhea and syphilis. This condition of affairs is almost beyond my understanding. We

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think it not illogical to assume that a thorough working knowledge of the surgery of the lower urinary and genital tract is an absolute necessity prior to attempting renal or ureteral surgery, hence the admission that gonorrhea is a problem for the individual urologist should not jeopardize the possibilities for obtaining cases of vesical or renal surgery.

The Treatment of Gonorrhea: A treatise on the treatment of gonorrhea of the genital tract is exceedingly difficult to write, as practically all literature on this subject contains the description of methods that have been handed down from one author to another, some of which have been long discarded and very brief original work is noted. You will agree also that to cover in detail this important subject within the time allotted would be impossible, hence just the important and practical phases as we see them will be considered. The treatment of gonorrheal urethritis and its complications has seen but few radical changes in the modus operandi of attack within the past fifteen years; however, we do not necessarily infer from this that the subject has suffered from a lack of intelligent scientific research and study. If we pause to consider the cultural difficulties of the gonococcus and the intricate ramifications of the tissues and organs generally involved, and seeming lack of advancement or achievement in further developing a more uniform and efficient treatment is well understood. Urologists are undoubtedly seeing cases earlier and patients realize the value of proper and efficient care at the very onset, hence relatively few complications such as strictures, prostatitis, periurethral abscesses and so forth are now seen.

In considering the proper rational for the management of acute gonorrheal urethritis, one is confronted with a formidable array of silver salts, dye stuffs, vegetable astringents and so forth, all of which are of some value depending an the case at hand and the results desired.

Our experience has been that the unpleasant complications during the onset of an acute attack are chiefly due to overtreatment on the part of the physician and patient. We consider it good judgment to err on the side of safety and rely during the stage of congestion on hot fomentations, rest, carefully selected diet, urinary antiseptics, sedatives, support to the part, rectal suppositories of Ext. belladonna and ichthyol and numerous sitz baths. The free intake of water and active bowels must be insisted upon, also exercise and sexual excitement must be avoided.

Abortive methods have long since been discarded as unscientific and dangerous. Acute inflammation of the urethra is not unlike inflammation of other mucous lined parts. The abortive treatment of acute inflammation in other parts is likewise unsuccessful.

The hyperacute stage, with edema of the loose cellular tissue, ectropion of the meatus, pain, discomfort and so forth, soon passes and copious discharge now appears. The internal medication during the beginning of the attack and when the symptoms are hyper-acute consists of saline laxatives and diluents. The alkaline salts of potassium and sodium are especially efficacious in reducing the acidity of the urine and rendering miturition less painful. The action of all these salts of sodium and potassium is to reduce acidity; they escape as carbonates. They act directly upon the nerves of the kidneys and renal cells, increase the water and solids excreted, hence are direct diuretics. The anti-belennorrhagics, namely oil santal, balsam copaiba, Ol. of cubeb, Kava kava and so forth, are oleoresinates which are excreted by the kidneys and appear in the urine as sodium and potassium resinates. They have a direct action on the lower urinary tract of a specific and antiseptic nature; they further relieve acute symptoms, diminish discharge and aid in the prevention of complications. Theoretically speaking, balsamics are of greater value during the height of discharge but combinations of alkaline and balsamic drugs are used by us throughout the entire course of attack, providing the gastric digestion is not disturbed.

Local Treatment: The local treatment depends naturally on the case at hand, each being more or less an entity unto itself and should be so considered. We chiefly rely for office treatments on instillations of protargol, argyrol, mercurochrome, 220 soluble, or warm irrigations of potassium permanganate 1:10,000 to 1:1,000. When discharge persists we advise silver nitrate irrigations varying in strength from 1:4000 to 1:2000. Patients are given one of the albuminates of silver for home injections and in our experience Neo Silvol 5% has been entirely satisfactory. This silver salt does not irritate, and also a fact of considerable importance, it will not

discolor the hands or linen, mercurochrome, 220 soluble, in our hands has been rather disappointing, although given a very exhaustive study in genital gonorrhea and in upper urinary tract conditions.

The discharge must be examined for the disappearance of organisms from the pus cells, and the appearance of extracellular forms, also the arrival of lymphocytes which is a favorable omen. Local medication is generally governed by the microscopic picture. We cannot too firmly emphasize the importance of routine prostatic analysis and massage in every case of urethral infection. This is indeed of much importance as prostatic abscesses quickly develop and it is very embarrassing to have your attention called to the fact by one of your colleagues, should your case be treated elsewhere.

Instrumental Treatment: Instrumental treatment is generally ushered in at the termination of the discharge, but not, however, until the urethra has been stimulated with 2% silver nitrate in order to produce a recurrence if possible. Should the discharge reappear, naturally resort to mild astringents or antiseptics as the case may demand until the provocative reactions disappear. Considerable judgment must be utilized as to the proper time to institute urethral instrumentation as hasty manipulation will frequently produce complications or irreparable pathology.

In case the provocative course is non-productive, then the urethera should be carefully dilated and massaged over the sound, in order to force to the surface any hidden or dormant areas hitherto quiescent.

The instrumental treatment consists of gradual urethral dilations with Charriere Benique, Otis or Van Buren sounds to be followed by Janet or Dida irrigations or by instillations with the Guyon or Ultzman syringes. All instrumental work must be judiciously performed.

Peristence of Discharge: Cases in which the discharge persists over rather an extended period are commonly seen and it generally indicates that the condition has taken on chronic characteristics. The pathology of the acute and chronic processes are quite distinct and yet the two stages merge so imperceptibly from one to the other that an exact line of demarcation is impossible, hence the necessity at this time of a careful urethroscopic inspection of the entire urethra. A meatotomy is frequently necessary. Chronic discharges are always due, in the absence of prostatitis or vesiculitis which are so frequently present, to infected Littré glands, strictures, or infected crypts of Morgagni. These are easily diagnosed urethroscopically.

The Littré glands, as you remember, are the true glands of the urethra, being situated in the mucosa and submucosa and one or many of these, it has been said, may empty into a crypt of Morgagni located in the upper wall and in the spongy urethra. We found it rather difficult to obtain any definite knowledge of the anatomy and course of the ducts of these glands. That they do not open at right angles to the urethra and that their lumen is generally impossible to enter by needles or sticks of fused silver has been clinically demonstrated by all who are treating these cases endoscopically. The treatment of urethral gland infection consists in selected cases of local applications of 5% silver nitrate or by the production of an adhesive inflammation with the electric needle.

I do not intend to infer that all cases of persistent discharge are necessarily treated urethroscopically as a large majority of cases with soft or hard infiltrations, multiple infected glands, granular patches, erosive ulcers, etc, are usually more satisfactorily treated with sounds and Kolman dilators, to be followed by dorsal massage and irrigations and instillations of antiseptics and astringents.

Urethral polyps, which not uncommonly are productive of discharge, are destroyed by diathermy, a very satisfactory procedure through the cysto-urethroscopic or plain endoscope.

Urethral Strictures: We will deal briefly with the treatment of urethral strictures. These cases are diagnosticated with a bougie a boûle and the endoscope, to ascertain their character and extent. If soft and dilatable, naturally gradual dilation is advised; however, we do not hesitate to insist upon urethrotomy and future gradual dilatation when the condition merits. We must not lose sight of the significant fact that strictures are commonly the forerunners of pyelitis, and this should ever be in mind in cases of persistent cloudy urine, in the generally used, three glass occult inspection test. We have seen cases clear up under a few lavages of the renal pelvis that had been massaged and dilated unsuccessfully for months.

The open operation for complete removal of anterior urethral stricture, as advised by McGowan, has not been generally adopted, it being rather laborious for such minor local pathology and in our opinion does not supplant former satisfactory methods. Strictures should be very scientifically treated as forcible dilation is often productive of considerable grief and not uncommonly followed by urethral fever and shock.

Epididymitis, Acute and Chronic: The acute attacks of epididymitis requires a very rigid regime of rest, active functions, support to the part, hot applications, rectal suppositories, sedatives internally and careful observation for the appearance of suppuration. We are not in the habit of operating on every case of epididymitis, but we are of the opinion that epididymotomy is justifiable in cases of advancing leucocytosis, increased swelling, advancing temperature and pain. We believe that the operation is surgically sound even though pus may not be found at the time, for the simple reason that tension is relieved and patients are thereby rendered more comfortable. Furthermore, the course is considerably shortened.

It is important to note that a wide incision and thorough and prolonged drainage of the epididymis is imperative or otherwise the incision will close prematurely and a very severe and troublesome vas differentitis results, which is extremely chronic in its course and discouraging to the patient.

We are of the opinion that a large number of cases with abscesses of the epididymi are due to trauma and not altogether to the gonococcus. Epididymitis with abscess is very likely to occur following vigorous instrumentation. This fact is universally known; also not a few cases of supposed gonorrheal epididymitis are none other than cases of genital tuberculosis.

The recurrence of discharge which usually appears following the subsidence of the epididymitis, is treated in the usual manner, namely, injection of mercurochrome, 220 soluble, one of the silver salts or irrigations with potassium permanganate. Naturally all urethral treatment is discontinued when epididymitis appears.

Diathermy, which was used by Schmidt, and one of us (White) about ten years ago in cases of subacute and chronic epididymitis, has been again uncovered, and in our hands with improved equipment has given results heretofore unattained. The time of application, strength of current and so forth, must be governed by experience and with the assistance of the patient. We cannot too forcibly recommend this valuable agent in the treatment of these obstinate cases with thick, chronically inflamed epididymi. Cases of recurrent epididymitis are permanently checked by vastotomy.

Prostatitis, Treatment of: Gonorrheal prostatitis we believe occurs to a greater or less degree in practically 95% of all cases of posterior urethritis and we have seen few cases in which the deep or posterior urethra was not early involved. It is virtually a case of continuity of tissue. The gonococcus passes into the prostatic ducts and prostatitis results, an ever-present sequela of urethral disease. In acute prostatitis three forms are recognized, namely, catarrhal, parenchymatous and suppurative or abscess. The indications for its proper course of treatment are to, first, lessen the severity of the posterior urethritis; second, prevent suppuration, and third, evacuate a prostatic abscess at the earliest possible moment. With the onset of severe acute prostatitis all local urethral treatment must be discontinued. Patients must be hospitalized if possible, urinary sedatives are given and the pain and tenesmus controlled by opium. Hot sitz baths, hot packs, and continuous rectal irrgations by means of a two-way catheter are often useful. The frequency of urination is a troublesome symptom and is generally relieved by administering combinations of tincture of belladonna and hyoscyamus or the bromides with mistura La Fayette internally. These patients must be catheterized when complete retention appears and in some cases it is considered good practice to install an indwelling catheter. The frequent passage of a rubber catheter into an acutely inflamed urethra is not wholly free of danger. The prostate should be examined daily and the blood picture must be daily obtained in order to be able to advise an early prostatomy should the gland proceed to the stage of suppuration. We have found it advisable in selected cases to drain the prostate, even though suppuration may not be present; the tense capsule is incised, engorgement relieved, and catheterization or indwelling catheter becomes unnecessary. We have carried out this procedure with encouraging results in quite a few cases and noted a marked improvement in the general condition and certainly an

earlier convalescence. It is necessary to call your attention to the fact that in cases who have had prostatotomies performed, nothing is gained in a short period of draining the wound, if the best results are to be obtained. Epididymitis very commonly occurs if the wounds are not thoroughly and properly packed and drained. This condition is not unlike a vas differentitis following an improperly drained epididymotomy wound.

Chronic prostatitis is the most discouraging complication of a Neisserian urethritis, and while the treatment is not entirely unfavorable yet the pathetic mental attitude which is so commonly seen, linked with our many shortcomings in the proper disposal of these cases, presents to us a rather staggering problem. The modern treatment consists of a regular routine of careful and prolonged prostatic massage, in order to free the glands of chronic inflammatory products, which have been retained in the dilated tubules by plugs of inspissated waste materials, occluding the prostatic ducts. Urethral dilations followed by instillations are an important adjunct in the routine treatment. It is imperative that the patient's confidence be obtained and all mental worry be dispelled in order to obtain satisfactory results.

Seminal Vesiculitis, Gonorrheal in Character: Seminal vesiculitis of gonorrheal origin as a distinct entity does not exist, it being invariably associated with a prostatitis and posterior urethritis. The successful treatment of seminal vesiculitis depends somewhat upon our knowledge of the varied and extensive symptomatology. The multiplicity of symptoms depending upon the anatomical proximity of the vesicles to the bladder, prostate and urethra.

The treatment at the onset is not unlike the suggestions formerly given for prostatitis, namely palliative and hydrotherapeutic and in a majority of uncomplicated cases the results are satisfactory. The acute suppurative cases which are not relieved by hydrotherapeutic measures must be freely drained by way of a perineal section and vesiculotomy. In chronic seminal vesiculitis which is usually complicated by sexual, rheumatic or psychic difficulties, we encounter a most difficult and trying condition. Chronic seminal vesicle cases should be given a regular thorough course of massage, urethral dilations and medications. The various complications, namely sexual, rheumatic, upper urinary tract conditions due to urethral obstruction, exostosis and so forth, must be separately considered.

We have always been of the opinion that if vasotomies and seminal vesiculectomies were earlier performed we would seldom experience such chronic complications, and our end results would be more illuminating. The psychic and sexual symptoms are late manifestations often due to a prolonged and irksome treatment with lack of encouragement. The synovial membranes are areas of choice predilection for the gonococic toxine, hence eliminate the vesicle sacs of infection at the earliest possible moment by vasotomy or by surgical attacks on the vesicles.

The treatment of joint cases complicating seminal vesiculitis is briefly outlined as follows: The case must be very carefully studied and all possible foci of infection should be eliminated. Teeth, tonsil, sinuses and every atrium of infection must be considered. We urge all rheumatic cases to become hospitalized in order that our treatment may be more rigidly instituted. These patients are given the usual routine urethral and prostatic treatments and in most cases heavy casts are applied for the purpose of obtaining absolute rest of the affected parts. Vaccines and foreign protein injections are used, and in some cases undoubtedly give splendid results. These results, however, are unfortunately of but short duration. Heat and extension are still useful and in those cases where our results are unsatisfactory, vasotomy or vesiculectomy is advised.

Sexual Cases: In rather a large number of cases with sclerotic vesicles, the sexual status was a neglible quantity, presenting every phase from mild inaptitude to complete impotence. Atonic vesicles were noted in cases of ejaculatory praecox, whereas cases of complete impotence usually presented hard fibrous sclerotic vesicles. The treatment in these cases is either palliative or surgical, the former consisting of endocrine therapy internally, alternating cold and hot rectal douches, caput applications of 20% silver nitrate or diathermic applications to the caput and the necessary encouragement to the patient. Fuller has reported a number of such cases in which the sexual status was normal following vesicle drain. We have had a similar result in some cases.

Summary:

1. The correct rational in the treatment of

gonorrhea and its complications in the male presents many difficult problems as yet unsolved.

2. Scientific research must be fostered.

3. Urologists must realize that gonorrheal infection of the genital tract is an integral segment in urology, equally as important as upper urinary pathology.

4. If gonorrheal cases were treated with more thought and consideration by individual urologists, venereal clinics and institutes would not flourish, and our store of scientific knowledge would be increased manifold.

7 West Madison Street.

PHYSIOTHERAPY AS APPLIED TO EYE, EAR, NOSE AND THROAT*

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To investigate the manifold variety of diseased conditions of the eye, ear, nose and throat with a view to applying physiotherapeutic remedies is a considerable task. In the first place to understand and at times to devise suitable techniques for applying these remedies; in the second place to be able to arrive at fixed opinions on the actual, the relative and the complementary values of the diverse electric modalities after a long series of treatments and experiments requires careful study and a great deal of observation and of time.

In my practice of eye, ear, nose and throat work in addition to orthodox methods, I have resorted to the use of 1, Galvanism; 2, High frequency; 3, Static electricity, and 4, to a limited extent, therapeutic light and heat.

I have tried to concentrate on these and ascertain their limits, expecting therafter to branch into other fields of physiotherapeutic activity as the need became definitely apparent. Undoubtedly in certain directions within the limit of these specialists, great strides forward have been made from the use of such remedies as quartz lamp and x-ray. But I shall be obliged to relinquish discussion of these to others more qualified to discuss them than I am.

Now in the short space of time that is allotted to me, it is not my aim to confuse you with giving you a mere jumble of scattered facts, and I think this can be avoided if I will dwell upon the details of a few simple techniques referring then briefly to the diseased conditions wherein these techniques can be applied with success.

I want to demonstrate first a few points on galvanic treatment of the nose. As an indifferent pole is used a Morse pad soaked with bicarbonate solution and placed on the back of the patient's neck or beneath the palm of the hand. In nose work the indifferent pole is usually made negative. On the positive side I employ two pieces of copper wire of about 18 or 20 gage thickness, taken from a spool such as you see here. This can be purchased in any hardware store. Each wire is coiled at one end to form a spiral contact around the terminal of a bifurcated cord. The straight portion is made about 5 inches in length, flattened a trifle with hammer or pinchers, so that it will hold the cotton with which it is now wrapped, dipped in a solution of some non-acutely irritating germicide such as 5% protargol or 1-500 acriflavin and inserted into the nose, successively in two directions, first along the floor of the nose extending into the naso-pharynx; second, extending upward and backward to take in the region of the middle and superior turbinates. The average dosage is 7 milliamperes with 5 minutes' duration of the electrodes in each direction. By the treatment is obtained the sedative and shrinking action of the positive pole itself and the deep germicidal effect of antiseptic positive ions cataphorically penetrating into the tissue.

One, two or three treatments such as these on successive days effectually relieve an acute or subacute choryza. Repeated at suitable intervals they will relieve and suppress to final extinction attacks of hay-fever. With the treatment have been obtained my only satisfactory results in cases of atrophic rhinitis.

In nasal obstruction due to chronic intumescent hypertrophy of the turbinates definite and fairly permanent improvement in breathing capacity from shrinkage of the turbinates can be obtained.

In cases of chronic mucopurulent rhinitis improvement to the point of cure will result when complicating conditions are absent or have been surgically removed. Let me amplify this last statement. Where there is a markedly obstructive deviation of the septum, or a septal spur in contact with a turbinate, or a suppurating sinus involvement or nasal polypi coincident often with an ethmoidal suppuration, a surgical operation is

*Read at Logan Square Masonic Temple, Oct. 21, 1924.

the first essential. Subsequent to the operation the discharge though diminished sometimes still persist. In such cases the treatment I have described is very effective to follow up.

And right here I want to digress a moment to make this statement that in cases of nasopharyngeal catarrh where there is much down dropping and accumulation of mucus in the throat, the removal of chronically inflamed tonsils is sometimes more magically effective than any procedure that can be done in the nose.

In applying galvanism to the ear a wire electrode is employed of the same type that I have described except that it is cut to a two-inch length. The first use that I have for galvanism in the ear is to obtain anesthetization of the ear drum, preliminary to a paracentesis; the process being one of cocaine cataphoresis. In wrapping the wire the cotton should be left loosely tufted at the end, then moistened with sterile tap water and dipped in cocaine flakes. The electrode should be well inserted into the external canal so that contact with the drum is assured. Dosage is 1 to 2 milliamperes for five to ten minutes.

Cases of diffuse external otitis with inflammatory swelling of the external auditory canal walls in varying degree to occlusion are my second indications for the use of galvanism in the ear. The method of treatment is the insertion into the external canal of the ear of the electrode wrapped in cotton and dipped in the protargol or acriflavin solution. Dosage is 2 to 4 milliamperes; duration of treatment ten minutes. And I find that the hard swelling in the external canal often recedes and cure is obtained without the necessity of using a knife upon the patient.

Galvanic methods for treatment of deafness and suppurating ears have been advocated. I have used them and believe them of value but have discarded them for diathermy methods that are equally or more effective and more agreeable to the patient.

Of various ways in which galvanism can be employed about the eye I have retained for myself only the use of the small felt-covered disc. The indifferent pole as usual is the Morse pad applied preferably to the back of the neck. The active pole soaked in bicarbonate solution I have used negatively applied to the eye for incipient cataract with what I have thought was slight clearing of the cataract and improvement of vision.

With the active pole positive I have believed that progress to cure was hastened in many cases of iritis; and I am practically convinced that in all cases of corneal ulcer the spread has been checked and clearing and progress to recovery accomplished without need for powerfully caustic and germicidal agents being applied to the site of the ulcer, which it is the habit of ophthalmologists often otherwise to employ.

Coming now to the more interesting topic of diathermy I have a few points in technique to mention that are now and a few achievements to record that have been most pleasing to me.

In applying high frequency to the eyes, I use a single or double non-vacuum eye-electrode of the type that you see here. Notice the metal cap and ring on the handle portion of the electrode. The ring is for the cord connection. The electrode is held by the patient directly in the hand between thumb and two fingers. No additional holder is required.

In treating the eye to obtain deep effects within the eyeball, the straight d'Arsonval current is to be advised, the eye-electrode being attached to one of the terminals, a plate of block tin on the back of the patient's neck or upper dorsal region being attached to the other to complete the circuit.

Where a more superficial heating is desired as in the eyelids or on the surface of the cornea, the plate of block tin is connected to one of the d'Arsonval terminals, the eye-electrode is attached to the Oudin terminal; and if you are not convinced from my telling you so, that with the former a more deeply penetrating, and with the latter a more surface effect is obtained, you only need to try the feel of the experiment on yourself. Average dosage for these treatments is up to 300 milliamperes; time, twenty to thirty minutes.

In treating cataracts I have obtained results which have seemed very wonderful. Senile cataracts of the stellate type with radiating sectors of opacity show most improvement, while the so-called cataracta complicata which is usually of a posterior polar type and also nuclear cataracts improve some but not so rapidly. With cataracts of the first type mentioned, improvements in vision from 20/200 or 20/100 up to 20/40, 20/30 and 20/25 have not been especially rare.

In cases of stubborn suppurative conjunctivitis where results from medicinal remedies are slow,

daily applications of the Oudin current through the same type of non-vacuum eye-electrode will dry up the secretion quicker than anything else that I know of.

In applying diathermy to the ears, I employ pieces of block tin cut in the fashion shown here with a somewhat crescentic opening to permit protrusion of the auricle and having a tongue-shaped piece overlying the tragus and extending into the hollow of the concha. These are made in two sizes, large and small. When it is desired to treat both ears equally, two of the smaller size are employed. When it is desired to localize the heating effect more in one year, the smaller plate is placed on the side to be treated and the larger on the opposite side.

These treatments I regard as of invaluable assistance in drying up acute and chronic suppurative ears. But I believe a bigger achievement is the result obtained in treating cases of deafness when used in conjunction with the positive static breeze.

Types of deafness most greatly benefited are those of subacute or chronic catarrhal otitis media type where there is blockage of the eustachian tube combined with the lack of luster, absence of the cone of light and increased opacity and sclerosis of the ear drum. It is surprising how patients whom I formerly regarded as hopeless now progress from a condition wherein they can can hear only the whispered voice on contact to a point where they will hear the whispered voice the length of a twenty-foot room.

In treating the nose a long vacuum electrode of the type you see here is a standard piece of apparatus. The success of the treatment depends on the degree of heat that can be produced and which is pushed to the limit of the patient's tolerance. The Oudin current is employed. I use the treatment with this electrode as a follow-up in all those nasal conditions which I mentioned as being benefited by the positive galvanic pole.

But the procedure which I value most highly in nose work involving incidentally the use of another of my original contrivances is that intended for reduction of hypertrophied turbinates. The method enables me to apply and exactly control the play upon the entire length of the turbinate of a shower of Oudin sparks, so that there results a ribbon like band of fulgurated tissue which separates after the usual length of time, leaving the turbinate much reduced. The ease of the method and the absence of subsequent inflammatory reaction and swelling make it easily preferable to the old method of hot wire cauterization.

The appliance as you see here is fashioned out of three parts:

1. A piece of heavy rubber insulating material serving as a handle and encasing

2. A piece of seven-stranded radio aerial wire acting as a conductor, part of which is further incased in

3. A piece of thin fiber tubing provided with a slit-like opening about an inch long near the one end which is flattened for convenience of insertion into the nose.

A marker is placed in such position that it will just disappear within the nostril when the far end of the slit-like groove corresponds with the posterior end of the inferior turbinate. Thus one avoids fulguration too far back. By continuing to observe through a speculum as the instrument is drawn out the play of sparks controlled under guidance of the eye is carried well to the anterior end of the turbinate.

In the throat when there is present a condition of chronic follicular pharyngitis with hoarseness, irritation and cough keeping the patient in constant misery, I know of no better remedy than the Oudin current forced to the limit of comfort through a vacuum throat-electrode such as you see here.

I will omit for the present any further remarks on the subject of diathermy in the throat as sufficient on the subject will be said when I come to demonstrate and to explain my method of tonsil desiccation on tomorrow afternoon and Thursday morning.

I will also cut short my remarks on static electricity with simply calling attention again to its remarkable efficiency when used as a follow up to diathermy in cases of so-called dry catarrhal otitis media. The positive static breeze is best administered in accordance with Sampson's suggestion, through a DeKraft blue pencil electrode, a sample of which you see here.

Oto sclerosis cases are a tough proposition to treat by any method, although I believe they are also benefited a little.

7 S. Crawford Ave.

DISCUSSION

Dr. E. J. Leigh (Hiawatha, Kans.): I would like to inquire of the Doctor a little further explanation of his technique for catarrhal deafness. Do you use more

than just the electrodes on the outside of the ear? Do you use anything at all on the outside of the ear where there is a refraction of the tympanic membrane?

Dr. Thometz: I use twenty minutes of diathermy and where both ears are involved ten minutes of the positive static breeze to each ear. I then follow that with vibration at the point of the jaw for about thirty seconds to each side of the jaw. Then inflate the eustachian tubes and then make some topical treatment to the nose, sometimes two per cent, silver nitrate, sometimes acriflavine.

Dr. L. M. Turbin (Madison, Wis.): How would you treat the effusion of the middle ear by diathermy?

Dr. Thometz: Do you mean an acute otitis media where the drum is red and bulging?

Dr. Turbin: Yes, sir.

Dr. Thometz: I have had a number of cases wherein I have used diathermy rather than paracentesis where the patient particularly objected to having the ear drum incised and was very much afraid of this maneuver.

I have had quite a number of these cases clear up without need for paracentesis. In this case you can either use the small piece of block tin on the side that has the ear involvement and the large on the opposite side, or use a non-vacuum electrode of a type I haven't got here which will fit directly into the ear, a curved, thin electrode which can fit well into the external canal.

Dr. Turbin: Would you use your fingers?

Dr. Thometz: I don't like to use the fingers as conductors because they heat up too much. It is rather uncomfortable and therefore you can't get near as much heat as you can with these contrivances.

Dr. Turbin: How long a treatment would you give for that same condition?

Dr. Thometz: About twenty minutes, as much heat as they can stand. With these electrodes I have used as high as 800 or 1,000 milliamperes. The patient's tolerance, however, is the best guide.

Dr. Turbin: How often would you give the treatment?

Dr. Thometz: Once a day as long as the acute condition existed and I would follow by inflation. Another thing I would use in addition to that is therapeutic light and heat, I give the patient a hand therapeutic lamp and tell him to use it at home. This helps along the cure.

FALSE, ACUTE SURGICAL ABDOMEN ON AN ALCOHOLIC BASIS*

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The term "Acute Surgical Abdomen" is used to designate a clinical syndrome consisting of acute abdominal pain, muscular rigidity, nausea and vomiting, leucocytosis and often "shock," the differential diagnosis lying between two or more conditions which require prompt surgical treatment. "Acute Surgical Abdomen" is simulated by a variety of non-surgical conditions, among the better known of which are various abdominal lesions; but even supradiaphragmatic pathology, such as pneumonia, pleurisy, pericarditis, angina pectoris, dissecting aneurysm of the thoracic aorta and throat infections as described by J. Brenneman,[1] sometimes closely resemble the above syndrome.

It is the purpose of this paper to relate our experience with recent cases of acute, alcoholic intoxication or so-called "Moonshine Poisoning" in which severe abdominal pain, vomiting, muscular rigidity, "shock," fever and leucocytosis were among the outstanding features. Some of these clinical pictures so closely resemble "Acute Surgical Abdomen" that operation was seriously considered when the patients were first admitted to the hospital.

The subject is of further interest in view of the frequency of increased medico-legal importance which alcohol poisoning has attained in recent years.

An extensive literature has accumulated, dealing chiefly with the effects of acute poisoning by methyl alcohol. Thus the marked affinity of methyl alcohol for the tissues of the optic nerves has been described by S. D. Hubbard,[2] S. L. Ziegler,[3] A. Comora,[4] S. Barbash,[5] R. P. Albough,[6] F. A. Morrison,[7] J. M. Downing[8] and V. R. Hurst.[9]

Similar effects may be produced by inhalation as described by A. A. Eisenberg.[10] C. Norris[11] pointed out that methyl alcohol is slowly and only partially oxydized in the animal body and is broken up into substances more poisonous than the original methyl alcohol, namely, formic acid and formaldehyde. G. A. Harrop and E. M. Benedict[12] reasoned that the formation of formic acid results in acidosis and that alkalinization should form an important part in the treatment. The fact that methyl alcohol is secreted for several days into the stomach and intestines led these authors to recommend also daily lavage of the stomach and bowels.

Many other features of present day acute alcohol poisoning have been carefully studied; but comparatively little has been said about the abdominal symptoms which occasionally may domi-

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nate the clinical picture. R. Isaacs[13] and A. O. Gettler and A. V. St. George[14] describe abdominal symptoms in their cases and N. S. Betts[15] reported a case in which the abdominal symptoms were so severe that acute pancreatitis was suspected. It it this comparative paucity in the literature of cases with prominent abdominal findings which leads us to report the following series of cases which simulated perforated peptic ulcer, acute appendicitis and peritonitis sufficiently to be so diagnosed by various physicians who examined them.

The first case simulated acute perforative peritonitis so closely that the attending surgeon diagnosed ruptured gastric ulcer in addition to acute alcoholism. The fact that the patient was brought directly from jail to the Cook County Hospital added to the difficulties of diagnosis since alcohol is usually not obtainable in quantity in our jails.

Case 1. The patient, J. G., male, age 33, was admitted to the surgical service of the Cook County Hospital on December 16, 1922, with a diagnosis of ruptured gastric ulcer. The patient was suddenly seized at eight o'clock of the evening before admission with acute, severe pain in the upper abdomen, causing him to double up. The pain was severe and continuous. There was nausea but no vomiting. There was no history of previous abdominal pain or digestive disturbances but the patient was neither attentive nor responsive.

Examination revealed a patient in great pain. The temperature was 99.6 and the pulse 96. There was marked tenderness and rigidity over the epigastrium and to a lesser degree over the right and left lower quadrants of the abdomen. Peristaltic sounds were practically absent over the entire abdomen but the liver dullness was not diminished in area. Further examination failed to reveal abnormal findings elsewhere. The white count was 14,300 and the urine was negative. A diagnosis was made of acute surgical abdomen, probably ruptured gastric ulcer and the patient was ordered prepared for immediate operation. The patient, however, refused to sign an "operation permit" in spite of the fact that he had been made aware of the possible dangers of delay. Next morning, without operation, he felt better, the tenderness was less marked and the rigidity and fever were gone. The patient then made the statement that he had taken ten drinks of "Moonshine" while in jail, about three hours before his pain began, but he "was afraid to tell" this sooner, while the police were still present. He rapidly improved under medical treatment (oleum petrolatum and liquid diet) and was well in five days. Further physical and x-ray examination of chest and abdomen were employed but nothing pathological was found. Attention should be called to the fact that the patient's implied accusation against the jail authorities is not to be taken too seriously.

The second case was considered to be one of empyema of the gall bladder with complicating broncho-pneumonia; but the autopsy, chemical examination of the urine and the subsequent history from the relatives suggest rather an acute toxic hepatitis due to alcohol.

Case 2. The patient, J. S., male, aged 37, was admitted to the Cook County Hospital on November 9, 1923, in a semi-delirious condition and so no adequate history was obtained. Examination revealed a deeply jaundiced patient who appeared acutely ill and was constantly moaning and hiccoughing. It was not noted that his breath was definitely alcoholic. The temperature was 101.4, pulse 120 and respirations 30. The pupils were small and reacted sluggishly to light. The sclerae were deeply jaundiced. Examination of the thorax revealed dullness over the lower aspects of both lungs with tubular breathing over these areas. Nothing abnormal was found in the heart. There was marked tenderness in the right upper quadrant of the abdomen and an indefinite tender mass which was considered to be the gall-bladder was palpated in this region. The liver appeared somewhat enlarged. The systolic blood pressure was 95 and the diastolic 80. The knee jerks were normal. X-ray examination (Dr. R. T. V.) showed patches in the lungs which were interpreted as atalectasis or bronchopneumonia. The urine showed some albumin, considerable bile, but no casts or sugar. The blood showed 5,000,000 red cells and 19,600 whites. The differential count showed 92% polymorphoneuclears. The Wassermann reaction on the blood was negative. A diagnosis of empyema of the gall bladder with complicating pneumonia was made but the patient was considered too ill for operation. Death occurred in two days and the autopsy performed by Dr. H. A. Singer revealed the following: acute bilateral confluent bronchopneumonia, acute parenchymatous degeneration and fatty changes in the liver, acute hyperplasia of the spleen and chronic, localized fibrous pericholecystitis. The gall bladder was of normal size and showed no other pathological changes than those mentioned. Chemical examination of the urine showed the presence of ethyl alcohol.

The third patient was admitted to the hospital with a diagnosis of a perforating or possibly ruptured gastric ulcer, but chiefly the fact that the onset of the pain was not quite typical led us to delay operation in spite of the fact that examination revealed many of the features of "Acute Surgical Abdomen."

Case 3. The patient C. K., male, aged 30, was admitted to the surgical service of the Cook County Hospital on March 4, 1924, with the diagnosis of ruptured gastric ulcer. He complained of severe, cramp-like pain in the epigastrium which came on abruptly five hours before admission to the hospital. The pain began in the left lower part of the chest and spread rapidly to the epigastrium and especially to a point about two and a half inches above the navel. Vomiting

occurred three hours after the pain began and recurred once. The bowels moved on the morning of the day of admission. He had had several similar attacks of epigastric pain previously which were diagnosed "gastritis." He had no pain after meals and never any jaundice.

Examination revealed a patient acutely ill and in great pain. There was marked tenderness and rigidity in the upper abdomen, especially on the left side. Peristalsis was not audible but tympanites was absent. Nothing abnormal was found in the heart or lungs and the pupils reacted well to light. The liver dullness was not obliterated. Nothing abnormal was found on rectal or genital examination. The urine was negative. The white blood count was 12,500, temperature 98, pulse 88 and respirations 20. Operation was deferred in view of the atypical onset but the patient was surgically prepared for prompt operation in case it should be needed. He was treated medically, mineral oil and liquids, and was again examined next morning. He then showed disorientation and confusion and rapidly developed a delirium tremens, from which he ultimately recovered without further abdominal symptoms.

The next case was admitted to the surgical wards of the Cook County Hospital with a diagnosis of acute appendicitis. He was not immediately operated upon, partly because he gave a history of having taken considerable whisky for two weeks, although none for the preceding five days and we had our previous experience with these cases acutely in mind. The subsequent course of his illness again emphasizes the importance of keeping in mind the possibility of alcohol poisoning as a cause of the syndrome generally recognized as "Acute Surgical Abdomen."

Case 4. The patient, M. K., male, aged 38, was admitted to the surgical service of the Cook County Hospital on March 19, 1924, with the diagnosis of acute appendicitis. He stated that he had been feeling chilly for about 24 hours before admission to the hospital. Eight hours later, a sudden, severe, abdominal pain developed in the right lower quadrant of the abdomen. He felt less pain when his legs were drawn up. Coughing increased the pain. There was nausea at the onset but no vomiting. The bowels moved daily.

Examination showed a patient who appeared to be in great pain. His pupils reacted to light. Nothing abnormal was found in the heart or lungs. There were marked tenderness and rigidity in the lower right quadrant of the abdomen. The liver and spleen were not palpable. The reflexes were normal. The systolic blood pressure was 124 and the diastolic 80. The white blood count was 13,600 with 86% polymorphoneuclears. The urine was negative. The temperature was 98, the pulse 96 and the respirations 20. Expectant treatment was instituted because the patient was known to have been a heavy drinker and because past experience with "alcoholics" had taught us to be cautious. Medical treatment was instituted and the patient was watched closely for further indications for operation. The symptoms rapidly disappeared and subsequent examination failed to reveal further abnormal findings.

The foregoing series of cases illustrates the clinical pictures which may be produced by acute alcoholism when the gastro-intestinal tract bears the brunt of the acute poisoning. We hope we have conveyed the impression that these cases closely resemble clinically the condition known as "Acute Surgical Abdomen." The clinical features which add to the difficulties are the leucocytosis, "shock," severe abdominal pain and tenderness and rigidity of the abdominal musculature. The history of an alcoholic debauch was not always obtained promptly in these cases because some of the patients deliberately made misstatements and others were in no condition on hospital admission to give a coherent account of the onset of the illness. An alcoholic odor to the breath, when present, is not decisive as the patient may have been given a drink to ease pain before coming to the hospital. Furthermore, a history of acute alcoholism frequently obtains with acute perforation of a peptic ulcer and sometimes with other acute abdominal conditions. Reluctance of the patient to go into details of symptomatology or manifest attempts at concealment in connection with his illness may put the physician on his guard. An important aid, too often neglected by the surgeon, is the use of the x-ray in acute abdominal conditions. In simple alcohol poisoning x-ray examination is negative. But in other patients with abdominal pain the x-ray may reveal pathological conditions in the chest, "gas patterns" in the abdomen in ileus, spontaneous pneumoperitoneum due to perforation somewhere in the gastro-intestinal tract and a variety of other interesting findings.

Resume:

1. Acute alcohol poisoning may produce a clinical picture which very closely resembles that of perforated peptic ulcer, appendicitis or empyema of the gall bladder and is likely to be mistaken for those conditions commonly grouped under the diagnosis of "Acute Surgical Abdomen."

2. The confusing manifestations in these cases of acute alcoholism are leucocytosis, "shock," abdominal pain and rigidity of the abdominal muscles. The difficulties in diagnosis actually

may be increased rather than diminished by the clinical history.

3. Errors in diagnosis in these instances may be avoided largely by keeping their possibility in mind. The fluoroscope may help. Physical examination and clinical experience are, of course, our chief reliance.

4. The analysis by the Coroner's chemists of gastric contents from our acutely alcoholic patients at the Cook County Hospital in recent years has shown the presence usually of irritant poisons in easily detectable amounts. Among these are methyl alcohol, phenol, lysol, mercuric chloride, fusel oil and various other gastrointestinal irritants. We are, therefore, inclined to ascribe the abdominal symptoms which we have noted to these denaturing agents rather than to the ethyl alcohol itself.

REFERENCES

1. J. Brenneman: Amer. J. Dis. Child., 22:493.
2. S. D. Hubbard: New York M. J., 111:16.
3. S. L. Ziegler, J. A. M. A., 77:1160.
4. A. Comora: New York M. J., 111:588.
5. S. Barbash: J. A. M. A., 78:430.
6. R. P. Albough: Mod. Med., 1:300.
7. F. A. Morrison: Am. J. Ophth., 5:645.
8. J. M. Downing: Jour. Iowa Med. Soc., 12:446.
9. V. R. Hurst: Am. Jour. Ophth., 4:277.
10. A. A. Eisenberg: Am. Jour. Pub. Health, 7:765.
11. C. Norris: New York M. J., 111:583.
12. G. A. Harrop and E. M. Benedict, J. A. M. A., 74:25.
13. R. Isaacs: J. A. M. A., 75:718.
14. A. O. Gettler and A. V. St. George, J. A. M. A., 70:145.
15. N. S. Betts: U. S. Nav. M. Bull., 13:791.

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PREVENTIVE SURGERY OF THE PANCREAS AND BILE DUCTS*

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In discussing surgery of the bile ducts and pancreas, it is my purpose to take up several points upon which I have made experimental, anatomical, and clinical studies in the last few years. I wish to emphasize, particularly, the necessity for early surgery of the bile ducts in the prevention of complications and in the treatment of pancreatitis, and cysts of the pancreas. The frequency of gallstone pathology has been quite striking in a study which I have made of cases of acute pancreatitis and of pancreatic cysts.

The commonly accepted theory of acute pancreatitis is that it is the result of one of the following causes: a reflux of normal or altered bile in the pancreatic duct; hematogenous infection; extension of infection along the lymphatics from surrounding viscera; ascending infection or a reflux of ferments from the duodenum; direct extension of infection or rupture of adjacent viscera.

Considering first the sphincter muscle at the outlet of the common bile and pancreatic ducts, we find that its action was first noticed by Glisson (1597-1677) in the 17th century, who observed that the orifice would close after the removal of a probe. It was not until 1887 that Oddi[1] demonstrated the existence of a true sphincter muscle independent of the intestinal wall. Helly[2] found that these fibres usually formed a figure 8 with the large ring around the bile duct and the smaller around the pancreatic duct. Hendrickson[3] showed that there was no muscle between the ducts in a few cases, but that the sphincter surrounded both of them.

The common bile and the chief pancreatic ducts usually join in the duodenal wall and open into an ampulla, which opens into the duodenum. After studying the varied anatomical relations at the outlet of the two ducts, it has seemed to me[4] preferable to group their terminations into three chief types for surgical consideration: 1. An ampulla type, in which the two ducts open into one ampulla; 2. A type with separate openings into the duodenum, in which the ducts may be divided by a thin septum, or may be widely separated at their outlet, or where there may be an absence of the duct of Wirsung; 3. A type with the junction of the two ducts above the sphincter or entirely outside the duodenal wall.

It is easy to see how the obstruction at the outlet in groups 1 and 3 might divert bile up the pancreatic duct or the reverse, with pancreatic secretion passing up the bile duct. Type 1 is the most common condition, while type 3 should be considered unusual. Type 2 occurs frequently enough to be considered normal. A study of the relations at the outlet of these two ducts should be done in all cases of pancreatitis coming to necropsy. I believe that this will add light to the theories of pancreatitis.

Baldwin[5] in a study of 90 human specimens, found that in 25.8% of them the ducts opened separately into the duodenum, while in 74.2% there was a common ampulla. Opie[6] reported a diversion of bile into the pancreatic duct anatomically possible in only three out of ten in-

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dividuals from his study of the ampulla and the relations of the two ducts. Mann and Giordano[7] have reported it possible anatomically in only 4.5% of cases from their observations. Recently Cameron and Noble[8] were able to impact a carefully selected biliary calculus in the ampulla of Vater, and then produce a reflux of fluid up the pancreatic duct in 65% of 100 specimens.

Fig. 1A.—Roentgenogram showing filling of the bile ducts following a barium meal one year after a direct anastomosis of the hepatic duct to the duodenum, with excision of a congenital cystic dilatation of the common duct. The patient, formerly with severe symptoms, is symptom free two years after operation.

Claude Bernard[9] first produced acute pancreatitis in animals in 1856, following the injection of a mixture of bile and sweet oil into the pancreatic duct of a dog. Other substances which may produce it, are, gastric juice, duodenal contents, weak solutions of acids and alkalies, fatty acids and sodium soaps of fatty acids, bile and bile salts, several bacilli or their acid products, diphtheria toxin, papain ferment, and trauma when combined with occlusion of the bloodvessels.

Gallstones or inflammation of the gallbladder are a definite predisposing cause to pancreatitis, and are present in a majority of cases of acute pancreatitis. In some cases at necropsy gallstones have been found in the ampulla. Zoepffel[10] found that there was acute necrosis of the pancreas in 10 of 150 operations on the bile ducts. Three cases, operated on early, recovered, while those operated on later, died.

I recently reviewed a series of 67 cases of acute pancreatitis. There was gallbladder disease present in 38 of the 67 cases, or 56.7%. There were gallstones in 25 cases, or 37%, 14 of them being women, 11 men. They were found in the common duct four times, being impacted in the ampulla twice. Inflammation of the gallbladder was present in 21 cases, or 32%. It was associated with stones in 8, and without stones in 13 cases. Inflammation of the gallbladder was present almost equally in males and in females.

There were 36 males averaging 44 years, and 31 females, averaging 41 years of age. The onset of pancreatitis was acute in 62 of the 67 cases, the mortality being 56.7% of all the cases.

This frequent association of disease of the biliary tracts, is also present with chronic pancreatitis. Barling[11] found gallstones present in all subacute cases of pancreatitis. He believes it is infectious probably from extension along the lymphatics or the ducts. Deaver[12] has advocated the theory of extension of infection along the lymphatics, but the acute type has not been produced experimentally. Graham and Peterman[13] offer considerable experimental evidence of the extension along the lymphatics in certain forms of chronic pancreatitis.

A certain group of hemorrhagic and perhaps other cysts of the pancreas are the result of acute or chronic pancreatitis. Hemorrhagic cysts resulting from acute pancreatitis occurred twice in my collected series. Retention cysts are

Fig. 1B.—The bile ducts are filled more peripherally. There are two dilated pouches present in the bile ducts from the left lobe of the liver . Roentgenograms taken after 24 hours showed practically no retention.

in many instances due to gradual obliteration of the ducts and interference with absorption in chronic pancreatitis. (Senn[14]). Judd[15] reports finding gallstones in 12 out of 41 cases of pancreatic cysts, with evidence of gallbladder disease in five others. In my review of 19 cysts, there were gallstones in but one. However, in this case there were many stones in the common duct, with a complicating acute necrotic pancreatitis.

The causes of acute necrotic pancreatitis in a large number of the cases without stones or clinical evidence of inflammation of the liver or gallbladder may be due to the action of the sphincter muscle or of inflammatory swelling in diverting bile into the pancreatic duct. Archibald[16] has been able to produce various grades of pancreatitis as the result of the sphincter alone, by increasing its resistance with the injection of acid solutions into the duodenum and by increasing the pressure of normal or altered bile in the ducts.

It is not infection, primarily, which produces the changes in the pancreas since a majority of these are sterile, but probably an early chemical cytolytic change due to bile with secondary digestive changes. (Tatum,[17] Bradley & Taylor[18]). Brocq[19] has shown that acute pancreatitis will result from the injection of bile into the pancreatic duct in animals only when done two to three hours after a full meal.

Hypertonicity of the sphincter may result from local or long nerve reflexes. Obstruction at the outlet without stones or spasm may come from a tumor or inflammation of the ampulla or the surrounding structures. Opie says that the somewhat greater frequency of pancreatic necrosis in men, whereas gallstones are more common in women, is perhaps due to the greater ability of the gallbladder in stout muscular men to drive bile from the gallbladder into the pancreatic ducts during the passage of a gallstone from the diverticulum of Vater. The action of the gallbladder, I believe, is largely passive. However, the force of the abdominal and other muscles during vomiting or straining very markedly increase the intrabilary duct pressure as I have observed experimentally. The increased abdominal muscle development might explain the greater frequency of pancreatitis in the male.

Ballin and Saltzstein[20] believe that most cases of acute pancreatitis follow cholecystitis rather than cholelithiasis because while gallstones are four times as frequent in women as in men, they found pancreatitis three times more frequent in men than in women. This proportion did not exist in my study of pancreatitis cases, since gallstones and inflammation of the gallbladder occurred almost equally in both sexes.

There is a wide variation in the resistance of the sphincter to the outflow of fluids from the bile ducts in animals. Archibald[21] found the resistance to be 500 to 650 mm. of water. Mann[22] found the resistance to be more variable but that it was rarely over 100 to 150 mm. of water. In a series of 25 dogs, I[4] found the resistance of the sphincter to average between 100 and 250 mm. of water. It was frequently as low as 50, or as high as 250 mm. In one case, it was 580 mm. This tonicity may be increased by the injection of HCL solution, adrenalin, and certain other drugs into the duodenum. Archibald found it to be increased by stimulation of the vagus and the central end of the sciatic, but not by stimulation of the splanchnics. The tonicity may be reduced by the application of a 25% solution of magnesium sulphate. In my series of animals it reduced the resistance of the sphincter about 80 to 100 mm. of water. The results seemed the same with either the gallbladder or the common duct connected with the manometer. My findings indicate an absent or negligible muscular contraction of the gallbladder in the relaxation reflex of the sphincter following the application of magnesium sulphate solution. This speaks against the theory of contrary innervation as being an active factor in the expulsion of bile. The muscular activity of the diaphragm and abdominal wall should be considered as factors in the normal evacuation of the gallbladder. The relaxation of the sphincter following the application of magnesium sulphate solution was transient and never complete. This fact is important in the application of this reaction to the treatment of impacted stones in the lower end of the common duct, because in spite of complete muscular relaxation, many stones would remain impacted by other structures.

Ascending infection may produce acute necrotic pancreatitis. The injection of the colon bacillus produces a fulminating type, experimentally. A reflux of duodenal contents up the chief or lesser pancreatic ducts may also produce acute pancreatitis. Carnot[23] produced it by passing a

thread into the duct and then irritating the duodenum with croton oil. Hess[24] produced it by fixing a funnel-shaped cannula in the duct and obstructing the duodenum below it. There are clinical cases of Gerhardi[25] and Konig-werth[26] of acute pancreatitis with stenosis of the duodenum below. Ascending parasites may produce an acute pancreatitis by obstructing the pancreatic ducts, by carrying the infection and perhaps activating the ferments. Recently two clinical cases[27 28] have been reported where the duct was obstructed by ascaris lumbricoides.

One animal on which I operated died from obstruction of a rubber tube, which had been passed from the duodenum into the common duct by a round worm. In three other cases, with tubes placed similarly, two had a mild hepatitis, but cultures from the gallbladder were negative. Some reports[29 30] show an almost constant infectious hepatitis following experimental anastomosis of the gallbladder to the stomach. Following one reported series[31] of experimental anastomoses of the pancreas to the intestine, there was shown to be an absence of ascending infection. Stasis is to my mind a large factor in promoting ascending infections not only of the bile tracts but elsewhere. Perhaps in some clinical cases there is a duodenal stasis, and inflammation of the papilla may produce first a stasis and later dilatation and infection in the bile and pancreatic ducts.

Stasis of the bile tract may be due to various diseased conditions such as functionless gallbladder, kinked or strictured ducts and spastic sphincter, although there may be no serious trouble until infection gains a foothold. Clinically, I think that the dangers of ascending infection of the bile duct where there is proper drainage without regurgitation from infected zones, have been overestimated. I wish to illustrate this point by citing a case[32] of resection of a congenital cystic common duct in which I did an anastomosis of the hepatic duct to the duodenum. The patient has had no symptoms since the operation over two years ago and has been completely relieved of severe obstructive symptoms with jaundice present before operation. In this case of hepatico-duodenostomy I have been able under the fluoroscope to see barium pass through the opening from the duodenum and spread out in the liver branches of the bile ducts. This occurred after a barium meal at two separate examinations, one a month after and one a year after operation. I believe this reflux must also occur after ordinary meals. There was no prolonged barium stasis in this case since there was only a trace seen at the end of 24 hours. In a similar condition[33] where there was biliary stasis with regurgitation of food, fatal ascending infection of the liver has resulted.

The immediate efforts of a cholecystectomy, associated with a spastic sphincter, increased bile duct pressure, or perhaps infection, may predispose to a pancreatitis. In the later effects after cholecystectomy it has been observed that the bile ducts may dilate with subsequent loss of resistance of the sphincter (Judd[34]), or that the bile ducts may dilate with an action similar to the gallbladder and maintain a continent sphincter; or, third, that there may be little or no dilatation of the bile ducts with an incontinent sphincter (Rost[35]).

Cholecystectomy is thought by some to be curative in certain cases of pancreatitis by producing a loss of sphincter resistance (Judd[34]). However, in producing this dilatation at the outlet, there must be either an increased or persistent intraduct bile pressure, which, under experimental conditions, has produced a pancreatitis. Unless the dilatation of the sphincter could be due to other conditions, such as a paralyzing nerve reflex, it would seem that the effect of a cholecystectomy might produce or aggravate a pancreatitis. The gallbladder, unless changed by inflammation in its walls, or obstruction of the cystic duct, may serve as a protecting mechanism. On account of the relation of the pancreatic to the bile duct, certain cases would be more susceptible for a reflux of bile, while in others it would be anatomically impossible. In the presence of infected or altered bile, the dangers of an acute pancreatitis would be increased, following a cholecystectomy. The possibility of this complication would be lessened after the subsidence of the infection and the dilatation of the sphincter, unless one considers a possible duodenal reflux of intestinal contents. The occurrence of a primary acute pancreatitis complicating cholecystectomy seems to be rare. However, in a series of 172 cholecystectomies, for inflammatory disease or calculus of the gallbladder alone, Whipple[36] found that the only death was the result of acute pancreatitis developing the second day after operation. In a series of 230 cases operated on for disease of both the biliary

tract and the pancreas there were 25 postoperative deaths, 15 of which showed pancreatic inflammation or tumor. There were symptoms of pancreatic asthenia noted as a postoperative complication in 18 of the series of 230 cases. The onset was usually the second to the ninth day, and the course averaged 12 days. Eight of these cases died. In all but one there proved to be a pancreatic lesion. Most of these cases had had a cholecystectomy done, but in some cases there had been a drainage of the common duct.

It is at present believed that in the presence of a pancreatitis, particularly associated with a biliary tract disorder, one should establish biliary drainage. This may be accomplished in acute cases by drainage of the gallbladder, but if this is removed the common duct may be drained. Judd[37] has called attention recently to a group of cases where symptoms persisted after a cholecystectomy but were relieved later by drainage of the common duct. This, he explains, by a chronic inflammatory thickening of the pancreas, which presses upon the terminal portion of the common duct. I believe that if one opens the common duct and finds that the outlet into the duodenum is patulous, external biliary drainage is unnecessary and undesirable, because of frequent secondary infection and the physiological loss of bile. In many cases, it is advantageous to pass a small rubber catheter down the common duct into the duodenum, at the same time that a separate tube is passed up the hepatic duct for external biliary drainage. Experimentally I have produced a dilatation of the sphincter by passing a rubber tube through it into the duomenum and fastening it there for one to two weeks. Clinically, I have put a tube through the common duct into the duodenum a number of times for the purpose of instilling fluids from the outside, following McArthur's[38] suggestion. The convalescence has always been remarkably smooth. This tube may also facilitate pancreatic drainage.

In performing a cholecystectomy, I wish to emphasize that there are many dangers of injury to the hepatic artery, its branches and to the bile ducts. From a detailed study[39] and from dissections of cadavers, it is evident that one will find some variation from the text-book normal in almost every dissection or operation. The gallbladder may be more safely removed in nearly all cases by the following technic. The dissection is started at the right side near the lower end of the gallbladder by incising the peritoneum along the liver junction. A line of cleavage is easily formed between the bladder and the liver in the region of the neck and pelvis. This is continued posteriorly to the left side of the gallbladder, where I usually make an opening through the peritoneal covering which has been pulled away from the bladder. The lower end of the gallbladder, including a low hanging pelvis, is freed posteriorly in order to rotate the bladder to the left. This exposes the junction of the neck with the cystic duct, which is followed down to the common duct. The cystic duct is dissected away from its anterior peritoneal covering, in which the cystic artery or its branches usually spread out as they pass to the gallbladder. The duct is cut, and traction on the upper end partially enucleates it and the lower end of the gallbladder from the peritoneal band which contains the cystic artery. This exposes the branches of the cystic artery as peripherally as possible where they may be more safely caught and ligated. The lower end of the gallbladder is now freed by cutting across this band and the dissection is completed, from below up. This method most surely prevents injury to normal or anomalous ducts or arteries. There is a dry field with practically no danger from a torn or retracted artery, since the branches are ligated peripherally while still attached to the peritoneum.

As a matter of routine, I leave a small soft rubber drain but no gauze after cholecystectomy. The drain should not be placed against the bile ducts or have a sharp tip. It is shortened daily and removed usually by the fourth day. This drain is a factor of safety and the wound closes by primary union. During vomiting the intraduct bile pressure is raised and may force open a carefully ligated cystic duct stump. At least once in a while profuse biliary drainage occurs in spite of careful ligation. The bile duct closes usually in 4 or 5 days and the drain may be removed as usual. There is often a certain amount of bloody wound secretion and sometimes a little bile from the raw surface of the liver. I believe drainage of this secretion prevents adhesions and lessens toxemia and the danger of infection.

Conclusions: 1. Gallstones or infection of the gallbladder are present in over one-half of the cases of acute pancreatitis. Early operation for stones or inflammation of the gallbladder has a

low mortality and is the surest preventive of many hepatic, pancreatic, and other serious complications.

2. Early, well-chosen, surgical treatment will conserve the protective mechanism of the bile tracts.

3. Both the operative and non-operative treatment of late hepatic and acute pancreatic complications are associated with a distressingly high mortality.

LITERATURE CITED

1. Oddi: D'une duposition a sphincter speciale de l'ouverture du canal choledoque. Arch. ital. de biol. 8:317, 1887.
2. Helly: Die Schlussmuskulatur an den Muendungen der Gallen-und der Pankreasgaenge. Arch. f. Mikr. Anat. 54:614, 1899.
3. Hendrickson: On the Musculature of the Duodenal Portion of the Common Bile Duct and of the Sphincter. Anat. Anz. 17:197; 1900.
4. McWhorter, G. L.: The Surgical Significance of the Common Bile Duct Sphincter. S. G. & O. 32:124; Feb., 1921.
5. Baldwin: The Pancreatic Ducts in Man, together with a Study of the Microscopical Structure of the Minor Duodenal Papilla., Anat. Record, V., 197; 1911.
6. Opie: Diseases of the Pancreas. (2nd Edition—1910).
7. Mann and Giordano: Arch. of Surg. 6:1; 1923.
8. Cameron and Noble: Reflux of Bile up the Duct of Wirsung Caused by an Impacted Biliary Calculus. J. A. M. A., 82:1410; May 3, 1924.
9. Claude Bernard: Memoire sur le Pancreas. Compt. rend. de l'acad. de Scien. 1856, Suppl., p. 379.
10. Zoepffel, H.: Klin. Wochnschr. I:1203; 1922.
11. Barling, G.: An Address on Pancreatitis and its Association with Cholecystitis and Gallstones. Br. Med. Jour. I:705; 1923.
12. Deaver, J. B.: Pancreatitis. Surg. Cl. North America., 1:1; 1921.
13. Graham & Peterman: Further Observations on the Lymphatic Origin of Cholecystitis, choledochitis and the Associated Pancreatitis. Arch. Surg. 4:23; 1922.
14. Senn, N.: Am. Jour. Med. Sc., 93:121; 1887.
15. Judd, E. S. Cysts of the Pancreas. Minn. Med. 4:75; Feb., 1921.
16. Archibald, E.: The Experimental Production of Pancreatitis in Animals as the Result of the Resistance of the Common Duct Sphincter. S. G. & O. 28:529; June, 1919.
17. Tatum: Jour. Biol. Chem., 27:243; 1916.
18. Bradley & Taylor: Jour. Biol. Chem. 27:243; 1916.
19. Brocq and Binet: Pathogenie de la Pancreatite Hemorrhagique. La Presse Med. No. 10:219, Mar. 7, 1923.
20. Ballin & Satzstein: Cyst Following Cholecystectomy. J. A. M. A., 76:1484, 1921.
21. Archibald & Brow: Surg. Gyn. & Ob. 28:529, 1919.
22. Mann, F. C.: A Study of the Tonicity of the Sphincter at the Duodenal End of the Common Bile Duct. J. Lab. & Clin. Med. V:106, 1919.
23. Carnot, P.: Maladies des Glandes Salivaires et due Pancreas. Paris, p. 109, 1908.
24. Hess: Munch. Med. Woch. 52: 644, 1905.
25. Gerhardi, Quoted by Hess.
26. Konig-werth, Quoted by Hess.
27. Rigby, H. M., Acute Hemorrhagic Pancreatitis: Round Worm in Pancreatic Duct. Br. Jour. Surg. 10:421, 1923.
28. Novis: Partial Obstruction of the Pancreatic Duct by Round Worms. Br. Jour. Surg., 10:421, 1923.
29. Gatewood & Poppens: Surg. Gyn. & Ob. 35:445; Oct., 1922.
30. Lehman, E. P., Hepatitis following Cholecystogastrostomy: Arch. Surg., 9:16; July, 1924.
31. Patrie, Pyle & Vale: Surg., Gyn., & Ob., 24:479; 1917.
32. McWhorter, G. L.: Congenital Cystic Dilatation of the Common Bile Duct. Arch of Surg., 8:604; Mar., 1924.
33. Fowler, R. S.: Choledochus Cyst. Ann. of Surg., 64:546; 1916.
34. Judd, E. S.: Boston Med. & Surg. Jour., 174:815; 1916.
35. Rost, F.: Mitt. a. d. Grenzgeb. d. Med. u. Chir., 26; 810; 1913.
36. Whipple, A. O., Pancreatic Asthenia as a Postoperative Complication in Patients with Lesions of the Pancreas. Ann. of Surg., 78:176; Aug., 1924.
37. Judd, E. S.: Condition of the Common Duct after Cholecystectomy. J. A. M. A., 81:704; 1923.
38. McArthur, L. L.: Journal Lancet, 36:723; Dec. 15, 1916.
39. McWhorter, G. L.: A New Method of Gallbladder Dissection with a Consideration of the Surgical Anatomy. S. G. & O., 36:256; Feb., 1923.

MODERN CONCEPTION OF STUTTERING AND STAMMERING*

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The disorder of speech called stuttering and stammering has been known, according to Chervin,[1] at least since the days of the Egyptian hieroglyphics.

In spite of this, there is as yet no concensus of opinion concerning its nature and treatment even among those who have given the subject prolonged and special study and consideration.

This is true not only of the lay-workers grappling with this problem, including a majority of the schools for stutterers and stammerers, but it is also true in large measure of physicians, neurologists and psychologists who have devoted special attention to its solution.

It is generally admitted that the problem of correct speech, and speech defects in particular, especially of stuttering and stammering, has not received the amount of scientific attention and study and of practical handling in our own United States that has been given to it in Germany, and of which it is truly deserving. However, it is gradually receiving more and more attention in our schools and universities.

Of the functional speech disorders, stuttering and stammering are the most serious and most disabling.

This disorder not only causes the individual so afflicted to undergo repeated and trying mental struggles, mortification and discouragement, but may so handicap otherwise deserving and capable individuals that they may regard their lives as failures and indeed have their careers blocked because of the inability to successfully compete with their average fellowmen in occupations and in social relations in which speech plays an important role.

It is especially when we consider the frequency of this disorder that the need of intensive study of the nature and proper treatment for this condition is fully appreciated. Conrad,[2] in 1904, gathered statistics from 87,440 children from six cities in the United States—Cleveland, Milwaukee, Louisville, Albany, Springfield, Mass., Kansas City, Mo. Of this number, 44,754 were boys and 42,686 were girls. He found 2.46%

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with speech defects and 0.87% with stuttering and stammering. Of the boys, 1.25%, and of the girls, 0.47% stuttered or stammered.

German recruiting officials found 6.66 men per one thousand were stammerers.[3]

Of 5,000 children in Madison, Wisconsin, below high school age, Smiley Blanton[4] found 5.69% with speech disorders, with 0.72% stammerers. On the basis of 1400 members of the freshman class (with a total of 2,240) at the University of Wisconsin, personally examined by him, Blanton[4] reports finding 18.13% with speech defects and 5.6% with stammering. Of the latter, a large proportion had a slight but nevertheless handicapping defect.

Miss Pauline Camp[5] personally surveyed 9,387 school children below high school age in Grand Rapids, Michigan, and reported 13% speech disorders, 2.64% stammering.

J. E. Wallin,[6] in a survey of 89,057 pupils, reported finding 2.8% speech disorders, 0.7% stammering.

It has been claimed that there are approximately one-half a million to one million persons with the more severe speech defects in the United States. If this be true, as has been mentioned by others, the number of speech defectives in the whole country is considerably in excess of the number of the blind, the deaf, and the dumb, the insane and the feeble-minded.

It has been estimated that there are from 200,000 to 300,000 stammerers and stutterers in the public schools of the United States. Statistics seem to indicate that approximately 1% of school children, if not of the general population, are afflicted with this disorder.

Without endeavoring to exaggerate the frequency of this condition, it is plain from the above statistics that it is much more common than the average person believes.

Definition of the Terms Stuttering and Stammering.—The terms stuttering and stammering are used in so many different senses by different writers that, in order to avoid confusion and misunderstanding, I shall first define exactly what I mean when I use these two terms.

Some use the term stammering for defects of speech due to anatomic anomalies, such as lisping, and stuttering for the speech disorder discussed in this paper.

Others use stammering for trouble with consonants, and stuttering for trouble with vowels.

Some writers use the term stuttering for any sudden, spasm in speech or hesitation in speech, while the word stammering is reserved for conditions which are so pronounced that the individual shows external evidence of his internal struggle. In other words, such writers would reserve the term stuttering for the minor, and the term stammering for the more exaggerated form of this disorder.

Finally there are those who use the terms stuttering and stammering synonymously and interchangeably, both meaning the same thing and applying alike to the slighter and more marked forms of this disorder. In this paper the terms are used in this sense.

We may define stuttering or stammering as a recurrent transient inability to pronounce a word or syllable or sound, as the result of which the individual undergoes an internal or mental struggle to pronounce the word or syllable or sound, often showing evidences of this struggle by external or bodily manifestations of a marked, widespread, and pronounced degree. There may be merely a repetition of the initial sound, letter or word before passing to the next; or a temporary inability to begin the pronounciation of the sound, letter or word; or inability to produce sound or articulate speech; or spasmodic action of a part or parts of the vocal apparatus from the diaphragm to the lips. In intervals between these spasmodic attacks, the individual has perfectly normal speech.

Current Erroneous Conceptions of Stammering and Stuttering.—It was at one time thought that stammering or stuttering was organic in origin and nature, and that the real cause of the trouble was peripheral—in the tongue, the lips or the muscles of the mouth. Based on this conception, various surgical procedures were employed to cure this disorder—the use of blisters or cauteries, piercing of the tongue with needles, the cutting of various tongue muscles and even cutting out the wedge-shaped portion from the back of the tongue. This view has now been universally discarded.

Although diseased conditions of the nose and throat, especially enlarged tonsils or adenoids, and obstruction of the nasal passages, may be aggravants of stammering and in some instances seem to have been the cause, nevertheless there is no organic condition characteristic of stammering. Physical obstruction of the air passages

is not the direct cause but it may interfere with clear enunciation or perfect articulation.

There is still quite prevalent the view that the trouble with the stammerer is with his breathing, especially the diaphragm, or with his vocalization, or with his articulation. Based on this conception, there have been evolved various complicated series of exercises which have for their objects the correction of the defects in the attainment of proper control of the breathing apparatus (of the diaphragm and other muscles which have to do with breathing), of the larynx or voice box (which has to do with vocalization or sound production), and of the throat and mouth (which have to do with articulation or speech production). It is being admitted by more and more students of this work that disturbances in the speech apparatus are the manifestations but not the cause of stammering.

Bleumel[7] has propounded the theory that stammering is due to what he calls transient auditory amnesia, and Swift[8] considers the cause to be visual asthenia. Bleumel, therefore, regards poor auditory imagery as the cause, while Swift inclines to poor visual imagery. Both of these writers contend that before producing a sound, we have, in our minds, an image (auditory according to Bleumel and visual according to Swift) of that which we are about to say. In the stammerer, they believe, this image is weak, and as a consequence the memory for the sound, syllable or word which they are about to say is too feeble for a proper connection to be made with the motor speech apparatus. Stammering is the result. The treatment recommended by these writers consists of efforts or exercises to increase the auditory and visual imagery respectively.

In the first place, it is not true that there is a visual or auditory image preceding speech. In the second place, even if it be true that while stammering the auditory and visual image is weak, the evidence is quite conclusive that this is not the cause but the result of the condition. I will admit that the cultivation of the habit of improving our imagery, especially by visualization, during speech, may be of great aid to the stammerer by distracting him from his disturbed mental state, compelling him to live more fully in that which he is saying, bringing about greater calmness and leading to slower and more rhythmic thinking and speech. But weak imagery, auditory, visual or otherwise, is not the primary cause of stammering.

Some regard the condition as due to a permanent impairment of the nervous system. There is no evidence to support this.

Others consider it hereditary or congenital. There is no evidence to prove that stammering per se is congenital or transmitted by heredity, although it may be admitted that the condition is more apt to occur in an individual with a congenitally irritable or unstable nervous system, especially in the speech centers.

It is quite generally admitted that the disorder is a trait acquired during the life of the individual.

And more and more the psychological aspect of the nature and origin of this disorder is being granted. According to this view the cause is mental and not bodily. But here too we have some current erroneous views.

Psychoanalysts,[9] explaining stammering by their well known theories, contend that the condition is due to and is a symbol of an internal, so-called "unconscious" mental struggle of which the individual is entirely unaware and centered for the most part about the sexual instinct. Some writers, adopting a modified psychoanalytic conception, now contend that the stammerer is unconsciously using his speech disorder as a weapon of protection or defense, so that he can escape from what he regards as undesirable situations.

Scripture[10] and Blanton[11] contend that the basis of stammering is an unconscious desire to avoid human society, ridiculous speech being used as a means of gaining the desired end. Those who have a keen insight into the mental makeup of the stammerer, or who have themselves ever stammered, know that this is not true, and that the stammerer works with his heart and soul to overcome his defect and will even go through much embarrassment, shame and mortification, yes, even permit himself to be the butt of laughter and ridicule in his insistent, persistent and determined efforts to say what he has in mind, speech defect or no speech defect.

Correct Psychologic Conception of Stammering.—It is the psychological approach to the study of the nature, the cause and the treatment of stammering which has now come to the fore. Rudolf Denhart[12] insisted on the mental aspect of stammering as causative as far back as 1890.

Albert Liebmann[13] has this viewpoint, and Ernest Tompkins,[14] in various communications, has insisted that the stammerer consciously and voluntarily interferes with normal automatic speech and so causes his disorder.

More and more students agree not only that this condition is primarily a disorder not of the body but of the mind, but also that the trouble is based on a disturbance of the emotions. Elmer L. Kenyon[15] has stressed this aspect, especially in relation to child development. He insists that "emotional perturbation is, then, the great fundamental cause of the spasmodic disturbance of speech" and considers the factors responsible for nervous excitability and emotionalism. He refers in particular to the fact that the nervous excitability and emotionalism occur during social relations, that this leads to mental confusion, with an impulsive effort to keep on talking, resulting in a speech panic or stampede.

It has been gradually brought home to those who have been battling with this problem that this disorder is a habit formation which has for its groundwork a certain mental state and a certain nervous makeup. It is to the development of this viewpoint that the remainder of this paper will be devoted.

Stammering, then, is not due to any permanent organic condition of the nervous system, central or peripheral. There is nothing permanently wrong with the stammerer's nerves or muscles of breathing, vocalization or articulation, as is proven by the fact that when not stammering he can breathe, vocalize and articulate normally. It is only while actually in the condition of stammering that disturbances in the control of the muscles of breathing (the chest), vocalization (the larynx), and articulation (the throat and mouth) result. These disturbances are but the result of a certain mental and nervous state with wrong habits and efforts on the part of the stammerer.

This makes necessary a knowledge of:

1. The immediate exciting causes responsible for the onset of stammering.

2. The nervous and mental attitudes and habits which are preliminary to the onset and development of stammering.

3. The normal mechanism of speech and the disturbances resulting during stammering.

CAUSES OF THE ONSET OF STAMMERING

Sex: As a rule, stammering occurs three times as frequently in the male as in the female. Statistics seem to indicate that in children it occurs twice and in adults nine times as frequently in the male as in the female.

Age of Onset: The number of cases increases in percentage from the kindergarten to the primary grades especially when the child begins to read aloud in school. Hartwell found the highest percentage of slight stammerers at the age of eight—or near the time of the second dentition, and the highest percentage of severe stammerers, in boys and girls, at the onset of puberty.

We may agree with Kenyon[15] when he says that in probably more than 95% of the cases stammering begins during the speech developmental period, and in probably more than 99% before the 20th year.

Heredity: Stammering as a disease entity is not inherited or even congenital. However, the nervous system in the stammerer may be hereditarily or congenitally over-irritable.

Exciting Causes: A tendency to nervous and mental excitability and emotionality is present. It may be due to a nervous system unusually irritable from hereditary or congenital causes, or from trauma (accidents or blows), disease (especially slow convalescence), malnutrition, environmental conditions (especially bad home training, poor living conditions with bad parental example). Imitation occasionally may be an immediate exciting cause, but only when the other conditions have already produced a state of nervous and mental excitability.

Accidental hesitancy and stumbling in speech may eventually lead to stammering.

NERVOUS AND MENTAL ATTITUDES AND HABITS PRECEDING ONSET OF STAMMERING

As has been pointed out by many others, the stammerer, as a rule, has no trouble in speaking when alone and not in the company of others, whereas the condition comes to the fore in his attempts in conversing with others, especially strangers or those with whom he does not feel at home. It is, however, also true that the stammerer may have his disorder even when speaking to those with whom he feels perfectly at home and is free from embarrassment or fear. In the latter case, then, it has become a mental and nervous habit. This mental and nervous

habit results primarily from undue nervous excitability and emotionalism. In other words, the individual is characterized by a nervous constitution or temperament. One of the fundamental characteristics of the nervous makeup is the tendency to hurry and rush, both bodily and mentally, so that we have an individual excessively impressionable, reactive, impulsive and explosive. This tendency to hurry and rush is characterized by a state of bodily nervous and mental tension, stress and strain. This shows itself in a more pronounced degree during social contact (that is, during contact with others), especially when speaking, and most usually, as Kenyon[15] has well pointed out, in the speech developmental period, especially if any of the immediate exciting causes be present. There results disorderly control of the mechanism of speech found in the stammerer, as will be explained below.

Mechanism of Normal Speech: Normal speech is the result of the co-ordination of three processes: breathing, phonation and articulation. In the stammerer there is inco-ordination of one sort or another of these three processes.

The speech apparatus consists of the following parts:

(a) The breathing apparatus: This consists of the thorax or chest, with the skin, fat, muscles and ribs; the diaphragm (which is the chief muscle of respiration), the lungs, the trachea or windpipe, and the muscles of the abdominal wall.

(b) The vocal apparatus: This comprises the larynx, with its cartilages, its extrinsic and intrinsic muscles and the vibrating vocal cords or bands.

(c) The articulating apparatus: This inincludes the tongue, the soft palate, the muscles of the cheek and throat, all of which are active; and the teeth and roof of the mouth, which are passive.

(d) The resonating chambers—the mouth, the throat, the nose, the cavities of the head and the facial bones.

There are two types of breathing: 1. breathing for life which is involuntary; and 2. breathing for speech which is voluntary.

The normal mechanism of speech is as follows:

The breathing apparatus supplies the current or blast of air from the lungs. In expiration, by the action of the diaphragm and the other muscles of expiration the moving column of air starts in motion or vibration the vocal bands or cords when the latter are drawn together, narrowing the opening between them, and in this fashion produces tone, voice or sound. This second process, occurring in the larynx, is called phonation or vocalization, which is dependent upon adduction of the vocal cords. The laryngeal mechanism, then, is the voice or sound producer. The oral mechanism is responsible for speech or articulation or enunciation by modifying the stream of tone or voice. It is therefore the sound modifier and speech producer.

Open vowel sounds are produced for the most part by the laryngeal mechanism. Consonants, in particular explosives, are produced for the most part by the oral mechanism.

Not only must voice be produced with the larynx, but words with the mouth, and vice versa.

There must be co-ordination between the respiratory, laryngeal and oral mechanisms.

Speech Mechanism During Stammering: Stammering is characterized by cramps, asynergies or inco-ordination in the functions of the muscle groups concerned with breathing, vocalization and articulation. In addition to this, there may be an involvement of many accessory movements which become habitual with the individual. Stammerers differ widely from each other and at different times in the particular form of inco-ordination, so that any single type is not especially characteristic of stammering.

There may be respiratory spasm, with an effort to speak at the end of expiration, when the breath is exhausted, or even on inspiration. A laryngeal spasm with spasmodic closure of the glottis may occur. Pharyngeal, labial or other oral spasms may result.

In any case, the fundamental characteristic of stammering is the inability to leave one element and to connect with the following sound.

The stammerer often starts wrong, that is, he assumes and remains fixed in a certain position of a certain part or parts of the speech apparatus from which it is impossible to pronounce the next sound that he is endeavoring to produce. For example, when the stammerer tries to get voice when there is practically no air in his lungs, he is surely struggling to do the impossible. It is the maintenance of impossible

positions for the production of the next sound which is the most characteristic disturbance of the speech mechanism found in stammerers. This view was presented independently at about the same time, by both Martin[16] and myself[17].

The Mechanism of Stammering.—I have elsewhere[17] briefly summarized the mechanism of stammering as follows:

The stammerer, for one reason or another, which I have discussed above, suffers from a state of nervous excitability. This nervous excitability expresses itself, in the stammerer, in a speech disorder. This speech disorder in the stammerer is produced as the result of a definite series of phenomena, all of which are under the direct control of the stammerer himself.

In the first place, there is the tendency on the part of the stammerer to nervous and mental hurry. This results in a state of general excitability, which leads the stammerer virtually to rush headlong and precipitately into speech expression of his thought. So great, so intense, so acute is this haste, that the stammerer, who thinks much faster than he can speak, endeavors to say immediately and practically with one effort that which he has in mind.

As a result of this terrific haste to speak, the stammerer throws one or more portions of his speech apparatus—the articulative, the vocal or the respiratory—into sudden, more or less violent spasm. In his blind rush to say everything in a moment and with one effort, the stammerer may endeavor to pronounce certain sounds from positions of his speech organs which cannot possibly produce those sounds in any human being. He may even begin with the wrong speech muscles and insist on pronouncing, from this false position, the especial sound with which he may be struggling. For instance, he may wish to say the word "big." Now, to pronounce the first letter b, it is necessary to use the lips and the tongue. The stammerer may, in his confusion and excitement and rush, begin by taking a deep breath, holding the deep breath and endeavoring to pronounce the letter "b" from this position. This, of course, is impossible for anybody. No matter how he may struggle to pronounce the sound "b" from this false position assumed by taking the initial deep breath and holding it, the stammerer will fail to do so until he gives up this position, relaxes, and proceeds to use his lips for the pronunciation of this sound.

In the majority of instances, we find that the stammerer begins the word properly but is unable to pronounce the next sound. For instance, when endeavoring to say the word "big," he will usually pronounce the "b" correctly but may be unable to pronounce the next sound represented by "i." This may compel him to repeat the sound of "b" over and over again, or even to go through the most violent efforts and internal struggles observable to everybody, to emit the next sound. In desperation, he may give up, and endeavor to use another word, or, on the other hand, after repeated efforts, he may finally be able to pronounce the next sound. What has happened during the struggle? In his blind rush to say the word "big" in one moment and with one effort, the stammerer begins with a proper pronunciation of the first sound, "b," but insists on pronouncing the second sound, "i," which should come from the voice-box and with his mouth open, while his lips and tongue and entire speech apparatus are still set for the pronunciation of the sound "b." This no human being can do. The sound "i" can be produced only if the mouth is open and not otherwise. As long as the mouth is closed and set for the pronunciation of the sound "b," for example, the sound "i" can never be produced. It is only until by compulsion the stammerer is forced to open his mouth, or in his wild struggles accidentally opens his mouth, that the sound "i" is finally produced.

In the same way the stammerer may begin to pronounce the word "off." The sound "o" must be produced with the mouth partially open. If the stammerer begins with the mouth closed and remains in that state of spasm, the sound "o" cannot be produced by him until the mouth is finally partially opened. Likewise, if the stammerer is successful in pronouncing the sound "o," but maintains the speech position for the sound "o," he cannot by any possibility produce the sound for "f" until his lips are brought together, which is necessary for the emission of this sound. No matter how prolonged or how persistent his efforts, the sound of "f" cannot be produced until he relaxes the speech position for the sound of "o" and assumes that for "f."

It is, therefore, plainly seen that the stammerer tries to pronounce certain sounds from positions of the speech apparatus which cannot possibly produce those sounds in any of us, and

that his efforts in this direction are due to his general excitability and hurry when speaking. As a consequence, the stammerer may maintain a fixed position of the speech apparatus in which only a consonant can be produced, and endeavor, while in this position, to pronounce a vowel, or, on the other hand, he may continue to keep his vowel-producing apparatus in continued action while struggling hurriedly and stubbornly for the pronunciation of a consonant. Since everyone of us must cease consonant-producing efforts in order to pronounce a vowel, or must relax vowel-producing efforts in order to pronounce a consonant, it is apparent that the stammerer, unknowingly, is endeavoring to make his speech apparatus do that which cannot be done by anyone. However, the stammerer unthinkingly persists in these misdirected efforts to do the impossible. In his insistence in this direction, he may bring into play much of his body, and assume, during the act of speaking, various accessory and supporting attitudes and positions, spasmodic in nature, just as he would if he were doing hard work or fighting or running. Finally, in desperation or by compulsion, the stammerer gives up the useless struggle, relaxes a portion of his speech apparatus, which up to that moment has been in spasm and from which he is endeavoring to compel himself to pronounce a sound which requires a different position of the speech apparatus, and only then, often to his great surprise and to the mystery of the onlookers, is he able to proceed to the pronunciation of the next sound.

It is but natural that the stammerer soon becomes embarrassed and ashamed and develops a fear of speech. This mental state of confusion and fear, with timidity, shame, embarrassment, and a feeling inferiority, the desire to avoid situations in which he may be compelled to speak, and many other consequences are but natural results; and these same mental states increase the stammerer's nervous excitability and lead to even more marked efforts to do the impossible, as has just been explained.

Furthermore, any condition — malnutrition, overwork, insufficient sleep, etc.,—which enhances nervous excitability, makes his stuttering, or the tendency to stutter, worse.

What we have to contend with, therefore, in the treatment of the stammerer is the condition of nervous excitability and emotionalism, wrong habits of speech resulting therefrom, and a complex mental state which is quickly added to and greatly exaggerates both of these conditions. A vicious circle results.

HINTS ON THE TREATMENT OF STAMMERING

Stammering is a preventable and curable disorder.

Early diagnosis and treatment will naturally give the best results.

It is a mistake to let this condition develop and depend upon the child "growing out of it."

The essential points in the treatment of such cases may be enumerated as follows:

1. Convincing the individual that he can get well.
2. The desire on the part of the individual to be cured.
3. The patient must be willing to work for his cure.
4. We must establish self-confidence in him.
5. Everything necessary to improve his physical, nervous and mental poise should be done.
6. The nature of his trouble, along the lines indicated above, should be clearly pointed out to him, if he is old enough to understand.
7. We must endeavor to overcome his general tendency to hurry and rush, especially during speech.
8. Slow speech should be insisted upon.
9. He should, when in oral spasm, always open his mouth quickly for the vowel following an initial consonant; close his mouth when he finds himself unable to leave a vowel; relax his respiratory apparatus, or breathe calmly or slowly, or begin over again when he finds himself in a state of respiratory spasm.
10. In some cases special exercises to increase visual or auditory imagery during speech may be helpful by compelling the patient to speak more slowly, and to live more fully in what he is saying, thus producing a state of calmness and poise.
11. In the same way, special exercises for different parts of the speech apparatus, especially vocal gymnastics, may be used with the object of giving the patient greater faith in himself, and in developing a fuller and more resonant voice.
12. Exercises for breath control, vowel lengthening and consonant production, and exercises to improve visual or auditory imagery can-

not by themselves produce the cure of stammering.

13. The stammerer should not look forward to a sudden or miraculous cure but should be willing to work for gradual improvement with ultimate success.

14. In the end his progressive improvement and the permanency of his cure will depend upon his careful carrying out of these principles.

REFERENCES

1. Chervin, Arthur: Begaiement et autres maladies fonctionnelles de la parole, Paris, 1901. See Fletcher, John Madison: An Experimental Study of Stuttering, American Journal of Psychology, April, 1924, Vol. XXV, pp. 201-255.
2. Conradi, Edward: Psychology and Pathology of Speech Development in the Child. Pedagogical Seminary, XI, 1904, pp. 327-380.
3. Cited by Baldwin, Onias Barber in a Study of Stammering, 1911. Not published but typewritten copy in library of University of Chicago.
4. Blanton, Smiley: Speech Disorders in School Children. Mental Hygiene, October, 1921, V. 4, 820.
5. Quoted in reference 4.
6. Quoted in reference 4.
7. Bleumel, C. S.: Stammering and Cognate Defects of Speech, New York, 1913.
8. Swift, Walter Babcock: Speech Defects in School Children and How to Treat Them. Boston and New York, 1918.
9. See, for example, Appelt, Alfred: The Real Cause of Stammering and its Permanent Cure. A treatise on psychoanalytical lines. London, 1911.
10. Scripture, E. W.: Stuttering, Lisping and Correction of the Speech of the Deaf. New York, 1923.
11. In reference 4 and in review of reference 10, in Mental Hygiene Book Review Supplement, January, 1924, p. 413.
12. Denhardt, Rudolf: Das Stottern. Eine psychose. Leipzig, 1890.
13. Liebmann, Albert: Vorlesungen ueber Sprachstorüngen. Berlin, 1898. Also his Die Psychische Behandlung von Sprachstorüngen.
14. Tompkins, Ernest: Papers in New York Med. Jour., November, 1919; Volta Review, July, 1920; Western Medical Times, February, 1920; etc.
15. Kenyon, Elmer L.: Stammering as a Disorder of Speech Dependent on Conditions of Child Development. Amer. Jour. Dis. of Children, December, 1919, Vol. XVIII, pp. 537-545.
16. Martin, Frederick: Stammering, Underlying Causes and Methods of Correction. Medical Record, May 29, 1920, p. 914.
17. Solomon, Meyer: The Nature and Cause of Stammering. New York Med. Jour., September 25, 1920.
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DISCUSSION

Dr. Elmer L. Kenyon, Chicago, opening the discussion, said:

It was about ten years ago that I read a paper on stammering before this very body. Probably these two papers are the only ones that have been ever read here. I am exceedingly glad, even grateful, that another physician has come forward to attempt to bring improvement in this disorder. I am in the habit of saying to medical students that stammering is one of the great scourges of the human race. People smile at stammerers, but stammerers do not smile.

During the last ten years improvement has been made in our understanding. That improvement has been psychological. The movement which has been going on with reference to mental hygiene is throwing important sidelights upon this disorder. The psychologist, as such, has come into the study, into the attempt to understand this disorder. We who are laryngologists and have been interested in this work for many years, have been very glad to welcome the psychologist into this field, for he can throw light upon it. We, however, saw the psychic origin of the disorder years ago.

I can approve entirely, I mean from my standpoint, the essayist's attitude with reference to the psychology of stammering. Now, I have had one keen fear, being in this work for a long time; that fear has been that the psychologist would not see the importance of understanding the peripheral mechanism of speech, if we are really to reach stammerers in the best way possible. I am very glad that the essayist has not taken the attitude of some psychologists, namely, there was no necessity of knowing the peripheral mechanism of speech in this disorder with detailed understanding.

It is true I do not agree with the essayist altogether with reference to his statements concerning the relationship of the mental side of this disorder to the complex organ of talking, but I am sure that with the mental attitude of Dr. Solomon it will only be a short time when we can entirely agree concerning the peripheral phenomena of stammering.

Now, it is well understood that stammerers stammer only in talking. They do not stammer in walking; they do not stammer in eating; they stammer in talking. The reason is that the peripheral organism of talking is an important factor in determining the effects of the mental upset of the stammerer. In the first place, the organ is a subconscious mechanism. We talk and know not how we talk. It is exceedingly complex; so complex that it requires a hundred muscles, pulling and interpulling, in various degrees, to say the simplest sound. In the third place, it is exceedingly delicate. In the fourth place, it is a mechanism which we use in our relationships to people, when the tendency to stammer, or the tendency to nervous excitement is on. In the fifth place, the act of talking goes back to the very act of thinking itself.

When we talk the muscles of speech interplay lightly and easily, like playing a piano, excepting that the act of talking is much more complex. There is lightness of action and quickness of action. Now comes this mental disturbance and the muscles tense up. That is what stammering is. My conception is this—that in proportion as we can analyze clearly the physiology of the peripheral organ of speech, the application of the mental disturbance of the stammerer to the peripheral speech machine will become quite simple, even nonmysterious. To my mind, Dr. Solomon does not present a true picture of these phenomena. I am particularly interested in seeing that those who are interested in this subject should know the peripheral organ of speech, know it well, because I believe the stammerer should be given a conscious understanding of how he talks. He should know how he talks, and he should know it in the same way that he knows how he writes. In other words, he should have a volitional understanding of what he must do in guiding this complex musculature.

As to the treatment suggested by the essayist, I am quite in agreement with it. I see nothing to disagree with from my standpoint excepting one thing—that I think the peripheral organ of speech should be clearly understood and that the act of talking should be made known to the stammerer so perfectly that he can

take hold of his speech mechanism and guide it to go right when it tends to go wrong.

Dr. D. B. Penniman, Rockford, continuing the discussion, said: I believe this section can count itself fortunate to have presented such an able paper, and such an able discussion. I feel a great deal of sympathy for the man who stammers, for I can do it myself, and I have trouble controlling it at times. When I saw this paper on the program I made up my mind I would hear it.

My mind goes back five years ago when my heart was very mellow towards the boys wearing the khaki. I went down to the train to get my son who had just come from France. He said, "My buddy is here." "All right, take him along." When we got to the place where this boy wanted to get out, he tried to say goodbye to my son and tried to thank me for the courtesy, and he was speechless. My son said to him: "Sing it, buddy, sing it." We drove on and I said nothing. I couldn't chide him for my heart was too mellow. Later I said to him: "That didn't seem just right." He said: "He can sing anything in the world. He would have been a high officer, but he can't give commands. When he would begin to stammer, we would say, 'Sing it, buddy,' and he had no trouble."

I would like to ask why this boy could sing anything he wanted to and couldn't speak it.

Dr. H. B. Boone, Chandlerville, continuing the discussion, said: I would like to ask Dr. Solomon if he knows of any recognized school where the methods that he advocates in his paper are taught.

Dr. D. W. Reid, Jacksonville, continuing the discussion, said: I know nothing medically about this subject. I want to speak of something that has not been spoken of, that is, the heredity feature of stammering. Down in Green County when I was a boy I knew a family in three generations of which there were stammerers. In one generation there were three brothers all of whom stammered. One of them especially, Uncle Jim R., was the worst stammerer I ever met in my life. His facial contortions were horrible to behold. He used to frighten the children when they first saw him talking. Older children could not keep from laughing at him until they got used to him. It was this case of heredity that I want to speak of which of course does not conflict with the congenital theory and the psychic theory of Dr. Solomon.

Now, about the singing. There is evidently something in the rhythmic act of singing that prevents stammering. In singing each word is spaced off in time, and there is no hurrying. Uncle Jim was intensely religious, and was always active in religious meetings. He always regarded it as a special dispensation of Providence that he could sing, pray and exhort without stammering. But his singing, praying and exhorting were all in the same singsong tone. His words, both in singing and praying, were spaced off like trains on a railroad with block-signals to prevent their piling up one upon the other as when he was talking.

It is to this element of rhythm in singing that prevents stammering that I wish to call attention, and to the heredity element as shown in this case of three generations.

Dr. Elmer L. Kenyon, Chicago, continuing the discussion, said: This gentleman just made a remark that I believe should be cleared up. He intimated that I had one theory whereas Dr. Solomon had another theory. That is not so. Dr. Solomon and I do not differ as to the cause of stammering. We do differ as to the peripheral aspects of the disorder.

Dr. Meyer Solomon, Chicago (closing the discussion): I wish to thank the members for the free discussion that this paper has brought forth. I wish especially to thank Dr. Kenyon for his very friendly and very kind attitude.

The thing to remember is that the cause of stammering is not in the periphery—it is not in the mouth—it is not in the larynx—it is not in the respiratory system. It is nervous and mental hurry which produces the disturbance and just as the disturbance has been produced by the individual so it can be cured by him.

Respiratory exercises, oral exercises or laryngeal exercises are very helpful in certain persons to produce certain results, to give them confidence, to develop a fuller voice. But they do not strike at the root of the trouble and many of the lay schools for stammering have made the error of continuing to treat the periphery when the trouble there is but the end product or end result. I agree that proper knowledge of the normal mechanism of speech should be had by the stammerer so that he should know what does happen to him when he does stammer, but it is not necessary for him to have a profound knowledge of the anatomy or of the muscles but in just about the general way I have presented it. At least that is my view.

All stammerers if they watch and train themselves can talk normally. They have the tendency to mental and nervous hurry in talking. If they can slow their speech, if they live more fully in what they are saying, if they give themselves time to think more rhythmically and speak more rhythmically, the condition can be prevented and cured. Practically always they need to be shown ways and means.

On the other hand, until the stammerer gets to the stage where he can do these things he will continue to have his spasms. Hence he also needs some aid to know what he should do when he is in the spasm. He can learn to control himself during the spasm and what to do at that time because the spasm is in one of three places,—in the respiratory system, in the larynx or in the mouth.

If he finds himself in the oral spasm he should immediately open the mouth to produce the next vowel. If he finds himself in a laryngeal spasm he must immediately realize that he cannot produce the next sound until he closes his mouth; if he finds himself in a respiratory spasm he cannot produce any sound until he relaxes the respiratory spasm. If he realizes as soon as he feels the spasm, and he can feel it before you can see it, that he must immediately get a grip on it and dominate it, if he speaks more slowly and more rhythmically and proceeds at once to relax himself, he will gain helpful control over any spasmodic episodes

that he has. At the same time he must continue to work on himself, to prevent mental hurry during speech. From those two angles he will eventually get control of the situation.

One speaker mentioned the fact that during singing the stammerer does not have trouble. With the views I have presented here you can see why. When we are singing we are living in the experience, we are thinking rhythmically and speaking rhythmically. When he speaks more slowly, when he speaks rhythmically, it is then that the stammerer has no trouble. Just for that reason to confine one to the exercises of the respiratory system or the vocal system or the oral system is an error in that the individual then becomes concerned with what is happening in the different parts of the speech mechanism which would often make him more self-conscious and fearful and concentrate his attention on the different regions while speaking. When he has no trouble while talking there is no reason why he should concern himself with the mouth or larynx or respiration. It is only while in the spasm that he should immediately realize at the earliest possible moment what is taking place and then endeavor to correct the spasm he is having. Other than then the stammerer should not concentrate on the mouth, on the larynx or on the respiration. He needs training in thinking rhythmically as well as speaking rhythmically.

With respect to the inheritability of this condition, I believe there is no evidence to prove that the condition is an inherited trait. Whether it is a congenital trait is also quite a question. Even whether the stammerer has congenital irritability of the speech centers is quite a question. We know there are many diseases that we once thought were inheritable traits which have been proved to be acquired—even tuberculosis, for instance—during the life of the individual. The factor of imitation in stuttering must not be forgotten.

I think Dr. Kenyon stressed the fact that stammering begins during the speech development period, which makes us think that conditions during infancy up to the time and during the time of the speech development period may be responsible for the onset of the condition. Even if you contend that it is an inherited condition, which it is not; even if you could prove that it is congenital, with the views I have presented, it is a curable and preventable condition. I will not split hairs over whether there is a congenital instability of the speech centers or not.

I might add here that you will find some schools advocating the silence cure; the individual should never talk unless he feels like speaking. One writer who has some very good views on this subject insists that the stammerer, until he is cured should not speak but use a pencil and paper to answer questions. I cannot see any logic in that or how the individual could be cured unless he puts himself in situations where he must speak and learn ways and means out of his trouble. In the same way we find Scripture, who has written much on this subject, advocating the view, or at any rate he did some years ago, that the stammerer should follow some tune while speaking. If I speak to you and have something I wish earnestly to say, if I think of a certain tune I do not see how I can concentrate on the particular thing I wish to present. All these artificial methods in no way aid in giving a real cure. The only way to get a real cure is facing the facts without any particular artificial technic, without any special mental tricks, but endeavoring to gain poise, to speak slowly, to speak rhythmically, to think rhythmically, to control the mental rush, and when in trouble to immediately realize that the thing to do is to relax the spasms and proceed to the next sound. In most cases a careful personality study is indicated.

I do not know of any schools that carry out this treatment, but even some of them are adopting the psychological approach to the treatment of stammering. All aids ("the melody cure," improving visual imagery, etc.) may be used in the beginning, while struggling for *the real cure.*

APLASTIC ANEMIA

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There has been no marked advance in our knowledge of primary anemias since Ehrlich, in 1888, reported aplastic anemia. A number of names have been coined to fit this condition, as hemolytic aplastic anemia (Turk); aleukie hemorrhagica (Frank); a regeneratory anemia (Pappenheim). Possibly the most apt is that proposed by Thursfield,—anemia gravis. Thursfield, in classifying primary anemias, states that there are but three types of severe blood disease occurring in children before the age of puberty, viz., leukemia, purpura and anemia gravis. Anemia gravis is evidenced by profound changes in the peripheral circulation and pathognomonic changes in the bone marrow. There is a complete cessation of cell regenerative activity, which has been considered resultant from profound toxic action upon the hematopoietic system, either by diminishing its reproductive power or by destroying the cells more quickly than they can be formed.

In 1908 Cabot collected twenty-four cases from the literature. In 1914 Musser and Hirschfield reported forty-four cases. In 1917 Minot showed a similarity between aplastic anemia and purpura hemorrhagica and succeeded in confusing a little more the classification of anemias. Smith carefully reviewed the literature, analyzing some sixty-five cases of this condition, without adding any light as to the etiology. At the present time there are some eighty cases of aplastic anemia reported, of which twenty-two are in children.

Heubner reported one case occurring in infancy. It is more frequently seen in female children.

Symptoms: This condition is evidenced by anemia, shortness of breath, and progressive asthenia. The course is usually rapid and fatal. The mucous membranes are extremely pallid and there is often a tendency to hemorrhage. Retinal hemorrhages are not uncommon in the cases reported, and petechiae and hemorrhages from the mucous membranes have been observed.

Blood: The blood picture is characteristic. There is a marked reduction in red cells, platelets and polymorphonuclear leucocytes, with a decrease in the hemoglobin. The average color index is .8. There is relatively little change from the normal in size, form or color. The coagulation time is normal and the fragility test shows dissolution of red cells in salt solution, which is normal. White cells are usually reduced, the polymorphonuclear leucocytes bearing the brunt of this reduction, with an increase in the lymphocytes. Cabot and Musser reported the relative lymphocytosis to be between 45 and 92 per cent. The lymphocytes vary but little from the normal in appearance. The polymorphonuclear leucocytes (Minot) show single and double lobes, more plentiful than normal, which gives the left-handed shift of Arnith, instead of the right-handed shift of pernicious anemia (Briggs). The blood platelets are reduced and seem normal, or slightly larger than normal.

Bone Marrow: The bone marrow is yellow in appearance, as the parenchyma has been replaced by fat cells. There is usually no evidence of cellular activity in the bone marrow.

Etiology: That the primary lesion is of the bone marrow is generally accepted, but whether or not this lesion is secondary to some toxic process which paralyzes its function, or whether this toxic process combines with cell hemolysis in producing this marked anemia, is debatable. That aplastic anemia is secondary to some toxic condition seems most reasonable when we observe cases of aplastic anemia reported secondary to tri-nitro-toluene (tnt) (Rennie). It has been experimentally produced by various toxins, such as saponin, benzole, ricin, hemolytic streptococcic serum and hemoglobin, and cellular activity has been promoted when the toxic agent is removed.

One school of observers claim that hemosiderin deposits in the liver and hemoglobin degeneration products in the urine exclude a diagnosis of aplastic anemia. These products of cellular hemolysis have been observed in many cases and were present in the case we are reporting. It would be hard to imagine any toxin or any standing toxin process which would evoke such profound changes in the hematopoietic viscera preventing cellular formation which would not affect, to a certain extent, these cells already in the peripheral or general circulation. While poikilocytosis and polychromatophilia are evidences of hemolysis, attributable by Rennie to an alteration in the isotonicity of the blood plasma, and are rarely found in aplastic anemia, it does not exclude the fact that cell hemolysis may occur as an early reaction of the peripheral circulation to toxemia.

CASE REPORT

The patient is a colored girl four years, eleven months of age, whose mother states that the patient's general health was good until a year ago, when she had an attack of tonsillitis. Since that time she has had about three severe attacks, the last being one month before entrance into the hospital. There were fever and general pains during these attacks, which usually lasted for a week or ten days. Since the last attack the mother states that the child has not recovered her strength and seems progressively weaker and is losing weight.

The past history reveals a full term, normal birth, breast fed for six months, weight at one year twenty-three pounds, first teeth at six months, walked at one and a half years. There is no history of the acute diseases of childhood; but for an occasional attack of tonsillitis and bronchitis the child has always been well. The family history is negative for tuberculosis, cancer or mental diseases. Father and mother are living and well, and the mother has never been pregnant since the birth of this child, nor is there a history of miscarriages or venereal disease.

Physical examination shows a thin, colored, female child about five years of age who does not seem acutely ill. Weight 35 pounds. Pupils are equal and react to light and accommodation. There is no discharge from the nose or ears or impairment of hearing. Mucous membranes of the mouth are very pale. Tonsils are large and slightly cryptic. The teeth are in poor condition. There are a few pa'pable cervical glands in the neck. The chest is slightly prominent anteriorly, expansion is equal and normal, breath sounds are normal, no areas of impaired resonance, or rales. The heart: apex beat is visible over a large area, with a maximum impulse in the sixth insterspace; the left border of the heart is 7 cm. from the midsternal line, the right border is 2.5 cm.; there is no thrill over the apex; two tones are heard with a slight systolic murmur in the first tone, the second pulmonic is not accentuated and two tones are heard over the site of the

other valves. The abdomen: scaphoid, very little subcutaneous tissue; there are no palpable tumor masses or areas of tenderness. The liver and spleen are not palpable. The extremities are symmetrical, with no deformities or limitation of movement. The reflexes are present and normal. Wassermann test was negative. Stool examination was negative for microscopic parasites and ova. Urine examination showed a faint trace of albumin with an occasional epithelial cell and leucocytes. Urochrome tests were repeatedly positive.

The first blood analsis showed red cells 710,000; leucocytes, 5,900; hemoglobin, Sahli, 20%; differential reds showed no poikilocytosis or polychromatophilia and no normoblasts or begaloblasts. There were no marked changes from the normal blood count except the profound anemia. Repeated differential examination of the leucocytes showed an average of 83% small lymphocytes, 3% large lymphocytes and 14% polymorphonuclear leucocytes.

Repeated blood cultures were negative. The fragility test showed hemolysis in .47 strength salt solution. Coagulation time was normal. The course of the disease was rapid. The child became progressively weaker and after ten days in the hospital had a temperature of 101. There was an increased area of dullness over the base of the heart and a systolic murmur accentuated over the mitral valve. Von Pirquet was negative and an x-ray of the chest showed the transverse diameter of the chest measured 16.4 cm. The left heart measures 6.3 cm. The right heart measures 2.2 cm. Transverse diameter of the heart measures 8.5 cm. The arch of the aorta measures 2.4 cm The child died after three weeks' observation in the hospital. The post-mortem findings:

Extreme generalized anemia; oligohemia;
Absence of red bone marrow;
Generalized anasarca (edema of anterior abdominal wall; moderate bilateral hydrothorax
Moderate emaciation;
Small epicardial petechial hemorrhages;
Acute hyperplasia of mesenteric lymph glands;
Cloudy swelling and fatty change of liver;
Cloudy swelling of the kidneys;
Large thymic body;
Vene-puncture wound of right cubital fossa;
Needle wound of left buttock;
Left fibrous pleuritis;
Adventitious fibrous adhesions in region of foramen epiploicum;
Well developed so-called Jackson's membrane.

Microscopic Findings: The bone marrow is yellow and microscopically shows very little parenchyma and much ordinary fat. There is no evidence of cellular activity. The spleen is slightly large and dark red in color. Microscopically there is an atrophy of the malpighian corpuscles, which is a reaction to a long standing toxic process. There is some fatty degeneration of the splenic pulp with fibrous tissue proliferation. The liver is slightly paler than normal and shows some areas of fatty degeneration. There is some marked atrophy of liver cells around the portal area. There is some hemosiderin in the liver, spleen and kidneys.

Diagnosis: A diagnosis of this condition is only conclusively made upon the post-mortem examination. The absence of any cellular activity in the bone marrow must be observed to corroborate the blood findings. Pernicious anemia is seldom observed in children and may be differentiated by the increased amount of homoglobin and the presence of juvenile cells. There is little or no tendency to hemorrhage, the spleen is enlarged and the skin is yellowish in color. Purpura hemorrhagica is undoubtedly closely affilated with aplastic anemia and can usually be separated by the tendency of blood to assume the post-hemorrhagic characteristics, namely, polymorphonuclear leucocytes, and an anemia which seldom is lower than 2,500,000 cells per cubic millimetre. Infective endocarditis in adults may present the characteristics of aplastic anemia, but there is almost invariably at some period in the course of the disease an evidence of bone marrow activity. Hodgkin's disease and the aleukemic stage of leukemia are usually ruled out by observing variations in the blood picture during the course of the disease. Von Jaksch's anemia is usually observed in infants and has a large spleen and a typical blood picture. Anemias secondary to parasites show no alteration in the white blood picture other than an increase in the eosinophiles. Gauchier's type of splenic anemia is characterized by family incidence and a liver and spleen enlargement which shows endothelial cell tumors.

Prognosis: The cases almost invariably terminate in death, with a course of from one to three months. Parkinson and Benecke report cases which have recovered, but the diagnosis is not complete until the bone marrow has been examined.

Treatment: As this condition is undoubtedly due to some severe toxic process, our main efforts should be devoted towards finding the focus and removing it. In our case, with the history of repeated attacks of tonsillitis with a development of the profound anemia following on the heels of the last attack, we are forced to conclude that this case was secondary to a focus in the tonsils. Whether or not there was any potential or acquired weakness of the hematopoietic system present we are unable to state. The development of

this condition was so rapid that we were unable to remove the tonsils before death.

Iron preparations have been freely used to little avail. Arsenic in various forms has been given and sometimes a temporary cellular activity has resulted. Herrman declares that the transfusion of whole blood is the only mode of treatment which has given any results. From 300 to 500 cubic centimetres of uncitrated blood seems to increase, at least temporarily, the number of platelets, and possibly stimulates to activity some normal area, if present, of bone marrow. Splenectomy has been performed in several cases with fatal results.

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BIBLIOGRAPHY

Larrabee, R. C.: Aplastic anemia with report of a case. Amer. J. Med. Sc. 142:57-68, 1911. (Girl 10, Boy 5.)
Caronia, G.: A case of pernicious aplastic anemia in a nursing child. Pediatria. Napoli, 2a. 21:908-913, 1913.
Babonneix and Tixier, L.: On three cases of pernicious anemia of aplastic type. Bull. et mem. Soc. Med. d'hop de Par. 3.s. 35:227-237, 193. (Three cases, Ages 28, 5, 11½.)
Guner: Biology of Blood Cells. 1914.
Kleinschmidt, H.: Aplastic hemolytic anemia in childhood. Jahr. f. Kinderh. Berl. n.s. 81:1-16, 1915.
Goodkind: Medical Clinics of Chicago. 1:781, 1915.
Heubner, O.: Bone marrow and aplastic anemia in early childhood. Folia hematol. Leipz. 19:347-370, 1915.
Hurwitz: Bull. Johns Hopkins Hosp. 26:235, 1915.
Nargli: Blutkraukheiten und Diagnost. 1968, p. 126.
Mamerto, Acuna: Pernicious aplastic anemia in infancy. Prenso m-d. argentina. 2:49-52. 1915-16.
Gorter, E.: Severe aplastic anemia in two boys of 6 and 3. Arch. de med. d'enf. 19:525, Oct., 1916.
Forger, E.: On two cases of grave aplastic anemia. Arch. de med. d. Enf. Par. 19:525-531, 1916.
Minot, G. R.: Classification and differential diagnosis of purpura hemorrhagica and aplastic anemia. Arch. Int. Med. 19:1062, June, 1917. (8 cases, Boy 7, Boy under 12, others adult.)
(No Author): A case of pernicious aplastic anemia in a nursling. Pediatria Napoli, 27:754-758, 1919.
Smith, L. W.: Unusual case of aplastic anemia. Amer. J. Dis. Child. 17:174, Mar., 1919.
Comby, J.: Aplastic anemia in children. Arch. di med. d'enf. 22:545, Oct., 1919.
Parkinson, J. P.: Case of aplastic anemia. Brit. J. Child. Dis. 16:1, Jan.-Mar., 1919.
Aplastic anemia. Proc. Roy. Soc. Med. Sec. Dis. of Child. 12:72, Aug., 1919.
Rennie, G. E.: Aplastic anemia. Med. Jour. Australia. 1:485, June 14, 1919. Four cases, one a child of 18 years.
Lasnier, E. P.: Aplastic pernicious anemia in girl of 3. Arch. espan de pediat. 5:385, July, 1921. Abst. J. A. M. A., 77:1548, Oct. 29, 1921.
Spak, H.: Fatal aplastic anemia in boy of 4. Acta Pediat. 1:310-323, Dec., 1921.
Herrman, C.: Idiopathic aplastic anemia, report of case in a child 4 years old, marked improvement from transfusion. Amer. J. Dis. Child., 23:484-492. June, 1922.

ANTIBODIES AND FATIGUE

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A child gets the measles. In due time he recovers, and usually he is thereafter immune from further attack. The fact that he got the measles in the first instance is evidence that, at that time, he did not have the power necessary to resist the attack. The fact that after recovery he is immune is evidence that he now has a power which he did not have before. That new power is an acquired character.

According to current theories, this new immunity is not a power at all, but certain physical substances which are carried in the blood and are called "antibodies." These antibodies have never been found, but are supposed to remain in the blood for a lifetime and furnish protection against further attack.

If this theory is true, then this new immunity is not an acquired character, because an acquired character must be some characteristic of the life in the individual. There are, therefore, two opposing theories. One is that resistance to disease lies in the powers of the life in the individual. The other is that this resistance is due to specific antibodies floating in the blood, and which are analagous to armor which cannot be pierced. It is the intention here to review some of the consequences of these theories.

After the child has accumulated a set of antibodies specific to the measles, he catches the chickenpox and gets a net set of antibodies specific to chickenpox. Then he gets the mumps and some antibodies peculiar to mumps; the scarlet fever and some antibodies for scarlet fever; gets vaccinated and gets antibodies for smallpox; and so on for a considerable variety of ailments. If these antibodies are real bodies they must occupy space, and if they occupy space they must form a pretty large part of the blood stream in elderly persons.

But this is not all. We are surrounded by countless varieties of bacteria, all of which must obtain their living at the expense of something else. The fact that they do not harm us brings up the argument that we must have myriads of different kinds of antibodies in our blood. And the fact that we are born immune to these bacteria, and many persons are born immune to pathogenic germs, argues that these antibodies must be carried in the fertilized ovum.

But when we die, all of these antibodies vanish. The dead body is quickly destroyed by bacteria which do not harm it in the least when the body is alive. This shows that the real resistance to bacterial attacks is in life, and not in any physical bodies.

If a person swallows an acid, his system manufactures an alkali to counteract the acid. This alkali may be considered as an antibody specific to the acid swallowed, but this alkali does not

remain in the blood after it has neutralized the acid. If it did, it would itself be a poison which the system would have to combat by manufacturing an acid.

When a person first takes a habit-forming drug, a small dose produces considerable effect. If he continues to take doses at intervals, it soon becomes necessary for him to take larger and larger doses to produce the effect. The dope fiend will take with impunity a dose big enough to kill a dozen men not habituated to that poison. He is able to resist such huge doses because his system manufactures an antibody to neutralize the poison, and when the drug comes along periodically, the system prepares the antidote in advance. If the drug should fail to come along on time, the person suffers torture and perhaps death because the antidote is itself a poison. These facts show that while an organism may produce an antibody to offset a poison, such antibody cannot remain permanently in the blood. The lasting resistance to a disease which comes as a result of having fought that disease, must be something other than an antibody.

A person who has had the measles once may have them again, if "his resistance is lowered." And by lowering resistance a person may succumb to anyone of a large variety of diseases to which he is immune when his resistance is not lowered. Resistance may be lowered by exposure to cold, by long continued over exertion, or by some other illness. If it is antibodies in the blood which furnish resistance, then we would have cases of physical bodies going out of existence by being subjected to reduced temperature, or being consumed because the person ran a foot race. Also, we would have cases of antibodies specific for a particular disease being used up in the process of fighting some other disease for which they are not specific and furnish no resistance.

Each living thing has certain powers of coping with the environment. These powers may be great or small, but ordinarily they are sufficient to enable the organism to meet successfully such circumstances as may arise during a life time. The most fundamental characteristic of all living things is that when the powers they have are exercised increasingly, but to an extent less than that which produces exhaustion, those powers become greater as a result of that exercise. We take advantage of this in training athletes and race horses. The powers which an organism acquires by such exercise are the biologic equivalent of the powers we know in mechanics. In fact, the power of living organisms and the powers of phyical science are different species of the genus energy. They are all transformable into each other.

The acquirement of physical powers by exercising them, and the acquirement of resistance to disease by fighting it, are fundamentally the same. In each case the individual exerts himself within the range of his physical powers, with the result that the powers he has become greater in consequence of his exertions. But if the range of his exertions in either case is beyond the range of the powers he had at the time, then he dies. Here is evidence to show that it is life itself which a person expends when he runs a foot race or fights a disease, and that life is really a form of energy.

When a person exerts himself for a considerable length of time, he becomes *fatigued,* that is, he becomes tired all over. The current theory is that in physical efforts certain cells break down and form "fatigue substances" which are toxins, and that fatigue is nothing else than the system being poisoned by these fatigue substances.

But when toxins, such as snake venom, bacterial poisons, or any other injurious substance, get into the system, sufficient antibodies are produced to neutralize the toxins, and the neutral substance is then expelled by way of the excretory organs. When a given toxin appears frequently, the organism regularly produces sufficient antibodies to meet these toxins, as in the case of habit forming drugs. Now, if fatigue is due to a toxin, then the system will produce an antibody for this toxin, and there will be no such thing as fatigue. In other words, if there are such things as antibodies for even temporary use, then fatigue cannot possibly be due to toxins.

In ordinary affairs we buy horse power or kilowatts from the power station, and we pay good money for those things. Those terms represent the fact that we measure energy by units, the same as we measure cloth by the yard, wood by the cord, and beef by the pound. A horse power from a horse is identical with the horse power from a steam engine, and foot pounds of work coming from the muscles of a man are

identical with the foot pounds coming from any mechanical power plant.

Energy is stored work, and the amount of energy in a man's body is not unlimited. When he exerts himself physically, he is expending energy from his store of energy, and unless there is some means for checking that expenditure before the store is exhausted, the man will die from no other cause than such expenditure. Fatigue is a depletion of the energy supply, and the sensation which we refer to as fatigue is a signal to the nervous system that the energy supply is being depleted. Without such signal, a man would drop dead from overexertion without being aware of the existence of danger.

If the distress which we call fatigue is due to a toxin, and the toxin is due to the break down of cellular tissue by reason of physical efforts, then the degree of distress should be proportional to the amount of toxin, and the amount of toxin should be proportional to the amount of physical effort. But the distress known as fatigue is not measured by the amount of efforts put forth. It is measured by the amount of available energy existing in the organism at the time.

If you place a hot body in an atmosphere of ordinary temperature, the heat in that body will radiate away until the body is at the same temperature as the surrounding air. If you charge a battery and let it stand, the charge will gradually leak away. If you wind up a spring and permit it to remain indefinitely in that condition, the tension in the spring will gradually disappear. These things are examples of what is known in physical science as the dissipation of energy.

The same thing occurs in the same way in living organisms. When an athlete takes up a sedentary life, his powers decline, and the amount of the decline is determined by the degree of inactivity and the length of time the inactivity continues. After five or ten years of sedentary life, a former athlete will find that he is greatly fatigued by exertions which previously would not worry him in the slightest.

Now, if fatigue is due to toxins produced by exertions, the degree of fatigue should be proportional to the amount of toxins produced, and the amount of toxins produced should be proportional to the exertions put forth. But we find that this is not the case. When an athlete changes from an active to a sedentary life, the store of energy in his organism declines in accordance with well known laws of physical science.

A certain amount of energy on hand in available form is needed to keep the works going. When a person exerts himself he expends energy from his store, and the supply gets down near to that needed to keep the machine going, he gets the distress signal. When a man has a large store of energy on hand he can expend a large amount before he gets the distress signal. If he has a small amount on hand, the distress signal comes quickly. That distress signal is what we call fatigue.

When a person is attacked by some pathological germ, he expends energy from his store in fighting those invaders. If antibodies are the tools used in that fight, then energy is expended in the production of those tools. If the fight is by way of phagocytosis, then energy is expended in physical combats as it would be expended in a wrestling match.

In a wrestling match or a foot race a person expends energy rapidly and then rests, but in the case of disease he expends energy less rapidly but has no opportunity to rest. In this last proceeding, while energy is not expended so rapidly as in a foot race, it is expended more rapidly than the store can be replenished from food, and the outcome depends upon the relationship between the magnitude of the store of energy and the magnitude of the attack. If the energy supply lasts until the germs are conquered, then the man recovers. If it does not, then he dies.

The fact that energy is expended and the supply largely exhausted in fighting a disease, is seen in the fact that a man beginning to recover from a long illness is very feeble. He is unable to expend many foot pounds of energy because he does not have them to expend. The mere effort of sitting up for a short time will make him fatigued. But it cannot be assumed that any material amount of toxins would be produced by such slight efforts.

We may sum up this matter by saying that fatigue is a condition in which the energy supply is largely depleted; that disease is a process of becoming fatigued; and that the sensation

called fatigue is a distress signal indicating the near exhaustion of the immediately available energy supply.

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A CASE OF IDIOPATHIC SPLENOMEGALY

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In view of the interest that has of late centered around splenectomy as a curative agent in certain diseases, especially blood dyscrasias, it seems justifiable to report a case which presents peculiarities in various respects.

Mrs. J. B., aged 38 years, of Polish descent, entered the Lutheran Memorial Hospital, August 22, 1924, five months after onset of illness, with complaints of pain in the left upper quadrant of the abdomen. Her husband and four children are living and well. The family history is negative. Fourteen years previously her left ear was operated on. In April, 1924, she began suffering from pain and discomfort in epigastrium and the left lumbar region and had a dragging sensation in the left flank. She lost her appetite and grew weaker. In the first part of June she noticed a swelling in the left hypochrondrium. The pain was constant, of a dull character, but paroxysmally it grew worse and finally it became excruciating. The patient suffered from lack of appetite, but there were no digestive disturbances. She lost twelve pounds in five months. X-ray treatment, some kind of hypodermic injections, and oral administration of various medicaments by several doctors were of no avail.

For the sake of brevity, only the essential points of the physical findings will be mentioned. The patient was very thin; she weighed 112 pounds; her complexion was pale; her tongue was heavily coated; her thyroid gland was not enlarged; the most careful examination of the heart could not reveal any pathology; the rate and rhythm of the pulse were normal; the blood-pressure was 120/80; the lymph glands were not enlarged. In the left upper quadrant of the abdomen there was a well marked protrusion, movable with respiration; it could be readily felt through the thin abdominal wall; the palpation of the anterior border revealed a dull edge and the presence of three distinct notches; the surface of the tumor was felt to be smooth. The enlarged spleen extended well beyond the median line in front and reached the height of the anterior iliac spine in the left mamillary line. The liver was not enlarged. A radiographic study of the gastrointestinal canal revealed an elongated stomach situated with both curvatures below the umbilical line. The blood examination gave the following figures: HC. 80%, R. B. C. 5,060,000, W. B. C. 14,300, Polymorphonuclear neutrophiles 84, lymphocytes 6, large mononuclears 5, eosinophiles 4, basophiles 1. The Wassermann test and blood cultures were negative; coagulation time, three minutes. Malaria parasites could not be found in the blood smears. The urine examination was negative.

After other forms of treatment had completely failed to ameliorate the condition of the patient, who was suffering greatly from pain and emaciation, a surgical procedure was taken into consideration. A preliminary hygienic treatment comprising rest, good nutritious food, fresh air and sunshine was instituted in order to raise the natural resistance of the patient.

A splenectomy was performed on August 26, following the technic of Balfour; adhesions were not numerous and no special difficulty was encountered in removal of the mass. The exploration of the abdominal organs, especially the palpation of the liver, gave negative results.

The removed spleen measured 10x12x20 cm. and weighed 580 gm. The surface was smooth, of a dark red color; on the convex side five round purple elevations measuring 2 to 3 cm. in diameter, were visible; there also were two whitish depressed areas 2 cm. in diameter; the consistency of the spleen was firm; the cut section was smooth, hard, dark colored and presented several typical wedge-shaped infarcts, corresponding to the elevations on the surface; most of them were reddish in color, two had a whitish appearance. The vessels at the hilus were dilated; the splenic artery contained thrombi of recent formation.

REPORT OF MICROSCOPICAL EXAMINATION OF SPLEEN

The stroma of the pulp is markedly increased. On account of the thickening of the reticular fibres, the sinus stand out very distinctly. A comparatively small amount of cells fills the spaces of the thick fibrillar meshwork. Lymphoid cells are predominant, besides a larger number of

eosinophile granulocytes and of plasma-cells with vacuolated cytoplasma are found.

The sinus are lined with flat endothelial cells. In some places the endothelium appears enlarged, vacuolated, and filled with the debris of phagocytated cells. The sinus contain only a few lymphocytes.

The follicles are small, and are formed by a few rows of lymphocytes about the central arteries which show hyaline thickening of the intima.

In the dark red areas the splenic tissue is deeply infiltrated by erythrocytes. The hemorrhagic infarction has destroyed the structures and only the small lymph follicles are still visible. The veins in the hemorrhagic parts are blockaded by fresh thrombi. Strands of fibrin and masses of red blood corpuscles fill the lumen. The walls of the thrombosized veins are not changed.

The convalescence was uneventful. There was a rise in temperature on the second day following the operation, reaching 100.1, which promptly returned to normal in twenty-four hours. The patient complained of pain in the left shoulder for several days; this symptom may be attributed to increased medullary activity but more probably it is due to diaphragmatic trauma as brought out by Capps in his study of reflex pain. The blood count on September 2—seven days after the operation—gave the following results: R. B. C. 4,800,000; W. B. C. 19,400; HC. 80%; Bl. pr. 110/70. Howell-Jolly bodies were present in the blood smears; the resistance of erythrocytes to hypotonic salt solution was increased as compared with the findings before the operation; erythrophagocytosis as observed by Hirschfeld in splenectomized animals could not be found. Some peculiar symptoms developed during the first two weeks of convalescence. The patient was suffering from profuse perspiration though the temperature was normal. The pupils were unequal; sometimes the right one was larger than the left one; few hours later the opposite was the case; the pupils reacted to light and on accommodation normally. The gums were bleeding at frequent intervals. A bloody discharge from the uterus appeared repeatedly in the first four weeks. The most striking feature, however, was the hyperperistalsis which was first observed on the fourth day after the operation: from time to time rapid peristaltic waves were seen in different parts of the abdomen through the thin abdominal wall; these attacks were associated with an unpleasant sensation experienced by the patient. The x-ray examination showed that the stomach assumed its normal position; there was a marked hyperperistalsis of the stomach and intestine; otherwise the findings were entirely negative. There was no nausea, no vomiting, no diarrhea. Six weeks after the operation, the hyperperistalsis was still present; it was not causing any digestive disturbances and gradually disappeared. Seven weeks after the operation no more peristaltic waves were visible.

COMMENTS

The removed spleen cannot be classified except under the general term of idiopathic splenomegalia. The cause of the vascular obliteration and formation of hemorrhagic and anemic infarcts could not be determined. The clinical history throws no light on the obscure origin of the enlargement of the spleen: neither cardiac involvement, especially endocarditis, nor chronic passive congestion due to obstruction in the pulmonary or portal circulation could be detected; there was no evidence of any chronic septic condition such as malaria or syphilis.

The interesting and unusual symptoms which developed after the operation were: 1. profuse hyperhidrosis without elevation of the temperature. 2. hemorrhagic diathesis not present before the operation. 3. inequality of pupils. 4. hyperperistalsis which cannot be explained by formation of postoperative adhesions as special attention had been paid to a careful covering of raw surfaces left after the removal of the spleen and the postoperative roentgerologic study of the stomach and intestines failed to reveal any kinks or obstruction.

While there is very little known concerning the function of the spleen, it is best considered as a filter set in the blood stream and as an organ of internal secretion. The spleen can be removed without permanent ill effects—probably because the associate organs may take up its functions. Nevertheless, the firm establishment of the fact that the spleen is not necessary to life does not release the surgeon from the duty of a careful and judicious selection of cases suitable for splenectomy. From study of the described case the assumption that the internal

secretion of the spleen may be more important than is generally accepted, seems to be justified. It would be desirable to pay special attention to the above mentioned phenomena in the cases of splenectomies which will be performed in the future.

1206 N. La Salle Street.

CLARIFICATION AND PASTEURIZATION OF MILK*

ARTHUR J. CLAY, M. D.
HOOPESTON, ILL.

Much has been written on this subject during the past five years, and in some sections of this state much progress has been made while in others little has been said or done, and since I have been one of our Health Officers for the past seven years it places me in a position to know a few facts at least along this part of the work that has been done by state and county officers. so therefore I have been requested to present this paper at this time.

The significance of the clarifier's use has been an outgrowth of the use of the "separator" in the attempt to clarify or purify milk. Since the function of the separator was only to remove fat from the milk, the clarifier does not necessarily do that but it removes foreign and unwholesome elements so far as this is possible, so accordingly there is good reason as a basis for an endeavor to perfect a machine which will perform the single function of clarification in its highest degree.

When milk is poured into a machine of this kind it adheres to the bowl in the form of a slime. Now, what is this slime? and do you think that the action has improved the milk? Well; this can only be answered partly by a summing up of the points bearing upon milk purification by the clarifier. It removes all visible dirt. It removes inflammatory products which include many of the causative germs and of course we must admit that it is a strainer.

But while they remove visible dirt they cannot remove all the disease-producing germs, and hence critics say, the consumer is mislead as to the real purity of the milk.

It has never been able to remove the soluble portion of feces or urine, nevertheless the milk appears clean. It will largely destroy the value of the dirt test. Though no more than good straining, it breaks up the clumps of bacteria and distributes them through the milk. The material that is removed during the past years has not yet been fully understood. It is fitting therefore to analyze the above statements, not exhaustively but a little more closely, just for indicating their looseness, so putting them all together the thought is thrown into one or possibly two channels. It removes visible dirt but not all the disease producing germs, hence the consumer is mislead.

It would be a rare centrifuging machine which would claim such a function as eliminating all pathogenic micro-organisms, in the light of what is known about centrifuging out such forms. Selective elimination of this nature savors of the superhuman at present, and implies more than is possible, so after all the clarifier is just a product of human effort and may be considered favorable in the case of straining; so, if the hearers will just sum up these statements as they stand; they must conclude that the clarifier is far more efficient than any thing else in use.

Now I might go into many details about the use and results that seem to help out with our milk troubles and I might go on with many assertions leaving them in their baldness and be hard for hearers to digest or understand and after all does any device accomplish it, does even pasturization of milk, which is a sort of panacea by any commission for milk trouble, overcome what is intimated? Such products exist in the best of milk, maybe in an infinitesimal degree, but it cannot be denied.

Many communities are depending upon inspection of the farms and dairies by the health authorities as a safeguard against infection of the milk supply. An efficient inspection service may be a preventive measure and strike at the root of the milk problem, and may assist the farmer in tracing the sources of an infected milk supply and preventing its recurrence and in the end be of educational value. The inspection of milk in its highest degree will be expensive and tends to increase the price of milk to the consumer, and even at that it cannot as yet be done at all places, but even with a surety against infection the inspection should be combined with pasteurization.

Here, too, is one of those statements which

*Read before Section on Public Health and Hygiene, Illinois State Medical Society, Springfield, May 7, 1924.

are so commonly brought forth to "clinch" an argument. Has man ever hesitated to utilize a new device, when such a device, so far as he can determine, improves the product, even if it does entail a new movement? An earlier writer who had done nothing particular in this work once closed his review with, "What next?"

Owing to limited time I must devote most of it to the benefits of pasteurization, the good of which can no longer be questioned. It is here in use, and here to stay, and the general tendency in this country is toward the pasteurization of all milk used, with possibly the exception of milk from tuberculin tested herds. So far as known, only one state, (Cal.) has a law that required all milk to be pasteurized, but from the reports of the work that is being done I feel that in two or three years many of the cities, and a few states, in the commonwealth will pass such a regulation.

Many states are doing a great deal of pasteurization, and it seems that the cities of a population between 10,000 and 25,000 are the leading places having it done. But now from what I have heard and read there seems to be a feeling among the milk inspectors and health officers that some crooked work is still going on in the industry, yet I feel that this is actually due to the lack of knowledge how to carry on the process, either by the dealer or the operator of the equipment, so it means first showing the operators how to do the right thing, and second, see to it that the right thing is done.

After visiting some of the pasteurization plants in this state you will see the need of supervision. Milk heated to the proper temperature and proper length of time, by the recording thermometer should range from 142 to 150 degrees F., and such should be recorded and kept on file for the competent inspector.

In some places pasteurization is simply carried on as an advertising feature, and not as a health measure, and such places should be inspected as some places did not even own a pasteurizing apparatus, and such plants were operated by men who had very little, if any appreciation of the health significance.

Another thing of importance that I might mention is the disposal of the milk after pasteurization, which is the protection against subsequent contamination by filling sterilized containers and then placing them in storage below 50 degrees F. Many kind of storage places are used, but like four or five different pasteurizers that are in use, they are also deficient and need improvement.

I might go on and mention about sixteen different things and patents in detail about pasteurization plants but time will not permit, and we as Health Officers, while thinking about all the processes, must not forget to think about the diseases that are carried by the use of milk.

One thing I want to mention before I get too far is the filling of milk bottles. It can be done by a machine that fills and caps the bottles and the dairy man don't even touch it, but, in many places in our own state as well as many others, they simply fill the bottle in a trough and by hand put on the cap and the milk that is spilt runs down to the end into a bucket which when filled is carried back and emptied into the supply tank and the second effort made to bottle it. Oh I could tell you many things that hurt the close observer.

The average educated man is interested in his work and takes pride in doing it right, so the best thing it seems to me is to require operators of pasteurizing machines to have sufficient knowledge of the process to be able to pass a written and laboratory examination in their own plant before granting them a certificate and put this matter under state control, then a high per cent. of the difficulties will be solved.

Now the educated or learned and conscientious gentlemen who are forever telling the public about the dangers lurking in milk would do everybody concerned a bigger favor if they would just confine such remarks to the ears of men who handle milk. Life is real to most of us, and we must not lose sight of the human touch of things which has so much to do with our health. Yet the business is largely a matter of dollars and cents, outgo and income, but after all the real vital force behind it is the human beings and their welfare, and furthermore, because of the fact milk is a fundamental food and enters so vitally into the economic and moral phases of our civilation, it is even more sensitive to those conditions affecting the economic and moral status of business than probably any other economic goods with which the country's industry is concerned.

No doubt you have read the recent report of the milk which was being used by the children

of the schools daily at Seneca Falls where, on March 10, about seventy-five were seriously poisoned by the farmer bringing in milk that had not been pasteurized. This is not the first time that such has happened and will continue to happen as long as our state laws remain as they are, but when we get awakened enough to have capable health officers in every county similar to three or four now working in our state such serious troubles to school children will cease.

I might mention here that "Milksickness" which occurs every dry season in southern Indiana and Illinois might be avoided if the milk is pasteurized, at least I have by experiments about proven such since I furnished the chapter in volume eight of "Tice's" work on the Practice of Medicine.

The question of milk supply has become important in the control of diptheria in many hospitals and homes, as it furnishes an excellent medium of transmission and fifty or more cases have been proven. Yet San Francisco public schools have reported that the children who are milk drinkers are less liable to fall victims of diptheria. They are to have milk until they grow strong and can offer more resistance to the epidemic but such milk used is pasteurized.

The results that are obtained in the Milwaukee schools may lead Wisconsin to adopt more strict rules in regard to the use of milk that has been provided. The co-operation of the health department, school board and teachers in one school for a period of six weeks has proven a gain for the underweight, and ten per cent. of those who do not drink milk are shown underweight. Experiments of this kind are being done in many places with pasteurized milk.

Many communities are depending upon inspection of the farms and dairies by the health authorities as a safeguard against infection of the milk supply and a thorough inspection service is a preventive measure that strikes at the root of the milk problem, which is valuable in tracing the sources of infected milk supply and preventing its recurrence. As a surety against infection, therefore, inspection should be combined with pasteurization. Epidemic of typhoid and scarlet fever has been traced by the thousand to unpasteurized milk, also countless numbers of septic sore throat.

Therefore the longer I study milk the more I see the need of county health officers who are capable men doing honest work for each county, as milk as human food is considered as about one-sixth of the total food used by the average family.

For many years health officials have endeavored to safeguard the public's milk supply. As a result of their efforts, strengthened by excellent co-operation on the part of milk producers and dairy organizations, this country now has a supply of which it may be justly proud, but there are cities or towns whose supervision is still somewhat lax, and whose milk regulations need revision. The general situation is good but yet there can and must be much improvement all over the state.

DISCUSSION

DR. THOMAS H. LEONARD (State Department of Health, Springfield): I don't know why I should be called on to discuss this paper. Dr. Clay has covered the field quite well. There are a few items in Dr. Clay's paper like the statements made in Dr. Liston's paper that should not go out in a meeting of this kind without some challenge. Illustrating, I had occasion to talk with Dr. Liston* two months ago with reference to the vaccination status of the people of his county and he advised me that the two nurses in his county had been influenced by reading and believing some of the literature that was put out by people that were opposed to vaccination, and so it is no surprise that we read recently of an unvaccinated nurse in a Moline hospital dying of smallpox. Possibly physicians will believe that there is an argument against vaccination if we allow these things to go unchallenged.

Dr. Clay spoke about the clarification of milk. I doubt if clarification is a health measure. It is a commercial rather than a health measure. He also spoke about the standard limits of pasteurization as heating from one hundred forty to one hundred fifty degrees Fahrenheit for a period of thirty minutes. The University of Illinois has made extensive experiments on pasteurization and their reports show that one degree above one hundred and forty-five degrees Fahrenheit, as for instance, one hundred and forty-six degrees Fahrenheit for a period of thirty minutes will hurt the commercial sale of milk because one degree higher of heat will throw down ten per cent. of the cream that the customer is expecting to see on his morning milk. While this again is not a health matter, it is a mater that we must deal with in handling milk commercially. In pasteurizing, milk

*Dr. Liston offered the suggestion that if the people were foolish enough not to be vaccinated they deserve to have smallpox.

should not be heated above one hundred and forty-five degrees Fahrenheit.

Dr. Clay stated that pasteurization is here, or is coming, and I believe that the public health men in Illinois counties and in cities recognize pasteurized milk as the best commercial milk supply.

He stated, I believe, that the testing of cattle for tuberculosis might be a substitute for pasteurization, if I understood him right. I don't think that the testing of cattle covers the entire field. It just covers one phase of the field, that is bovine tuberculosis; we still may have all the other disease producing germs in milk after bovine tuberculosis is entirely eradicated, if we live to see that time. I doubt if it will occur in the next ten years, and possibly many years after that before bovine tuberculosis will be eradicated in Illinois. The State Veterinarian advised me a few days ago that if the machinery in operation to eradicate bovine tuberculosis should be active for the next ten years we would still have bovine tuberculosis in Illinois, so we need something to take its place for that period at least.

We heard Dr. Ochsner state last night that bovine tuberculosis as manifested in surgical tuberculosis is almost extinct in Chicago today.

I am glad to be present to hear medical men advocating the pasteurizing of milk. I find in my visits with the men in the various cities that medical men still think that possibly the cooking or the pasteurization of milk destroys food values. I think that we as a public overlook the important point that most all of our foods are cooked and if there are bacteria in the foodstuffs such as potatoes and other vegetables, that are cooked we eat the potato, bacteria and all, and think nothing of it, but if there are a few bacteria in milk we eat the bacteria in milk, but we hear people objecting to eating the dead bacteria consumed in milk. The food value of milk is so slightly hurt by pasteurization that medical men should overlook it because we can feed to these children the substances that are destroyed in cooking, with a few drops of orange juice and the matter of cooked or pasteurized milk should not stand in the way of safe milk. We have arrived now at the place where we must stand for one thing above all others in milk and that is safe milk from a health point of view.

Society Proceedings

ADAMS COUNTY

The January meeting, January 20, 1925, was the Annual Social Meeting and was a joint meeting of the Adams County Medical Society with the Woman's Auxiliary to the Society. Fifty-two were present. After an informal gathering a splendid banquet was served. Following the banquet, Dr. Arthur Bitter, Chairman of the Entertainment Committee, stated that girls from the Y. W. C. A Federation would present an entertainment. The first number was a take-off on the Mayo Clinic by five girls, and the next was a reading and the third number was some selections on the piano and singing. Dr. A. Bitter then turned the meeting over to the toastmaster, Dr. C. D. Center. The following members were called upon to respond to toasts: Dr. Aleshire, "The Country Physician and 20 Degrees Below Zero." Dr. Arthur Bitter, "Living Up and Living Down to My Father's Reputation." Dr. Cohen, "All I Want Is a Drop of Your Blood." Dr. Stevenson responded to a toast which had been intended for Mrs. Stevenson, on "Sometimes I Wish My Husband Was an Auctioneer." Dr. Pollard, "The Joys of Transplantation." "Mrs. H Swanberg, "Tell Me the Old, Old Story." Drs. Jurgens and Knox had been scheduled to give toasts but were unable to be present. At the conclusion of the toasts dancing was enjoyed until midnight.

Harold Swanberg, M. D.,
Secretary.

Special January Meeting

January 23, 1925.—This was a special meeting called at 4:00 p. m. by the president to discuss the proposed clinical laboratory to be conducted by the Quincy Public health District, Col. W. D. Wrightson, local public health officer, having been invited to address the meeting. The president, Dr. C. D. Center, was in the chair and 43 members were present.

Dr. Beirne moved that the meeting be a closed one to members of the Adams County Medical Society and Col. Wrightson and the chair be empowered to give out the publicity. Second and carried The chair then explained the purpose of the meeting and the method in which it would be conducted, Col. Wrightson being extended the privilege to address the membership.

Col. Wrightson then proceeded to explain why he had recommended the closing of the district Venereal Clinic and why he wished to make a change in the present method of conducting the district laboratory, substituting in its stead a full time laboratory under his direct control which would make examinations of milk, water, sewage, sputum, blood, urine, tissue and in fact examinations of every kind which are usually done by clinical and state public health laboratories.

Following this a great many physicians asked questions and then a general discussion was engaged in. Those taking part were: Drs. Knox, Nickerson, Beirne, Brenner, Wells, Cohen, Koch, Baker, Pollock, Stevenson, Pearce, A. Bitter, Center, Swanberg, Shawgo, Pollard, Montgomery and Col. Wrightson. No one voiced an objection to the recommendation of closing the venereal clinic—in fact there appeared a general sense of approval. Several members protested vigorously against the scope of the work of the proposed laboratory. At the conclusion Dr. Beirne made a motion that the entire matter be left on the table. Seconded by Dr. Montgomery and carried. Dr. Nick-

erson then moved that we adjourn. Seconded and carried.

Adjournment about 6:25 p m.

Harold Swanberg, M. D.,
Secretary.

COOK COUNTY

Joint Meeting Chicago Medical and Chicago Laryngological and Otological Society, Jan. 14, 1925

Internal Ear—Some of the newer conceptions of its structure and function—(Lantern slide demonstration) .....George E. Shambaugh
Discussion: J. Holinger.

Otology—Some present day clinical Problems.....
.....J. Gordon Wilson
Discussion: Chas. Robertson and Joseph C. Beck.

Meeting of the Central Society Under the Auspices of the Jackson Park Branch, Jan. 21, 1925

The Tonus of the Blood Vessels.....A. J. Carlson
Paroxysmal Tachycardia:.....Wilbur E. Post
Discussion by James G. Carr, James R. Greer.

Diagnostic Clinic, Jan. 28, 1925

Interesting Cases in Hydronephrosis, Pyelonephrosis and Diverticulum of the Bladder.....
.....Vincent J. O'Conor
Medical Complications of Pregnancy.Solomon Strouse
Surgical Clinic .....Carl Beck

JOINT MEETING OF THE CHICAGO LARYNGOLOGICAL AND OTOLOGICAL AND THE CHICAGO NEUROLOGICAL SOCIETIES

Abstract of Proceedings

A joint meeting of these two Societies was held on Monday, December 3, 1923, at the Auditorium Hotel, at 7:45 p. m.

Dr. John A. Cavanaugh, President of the Chicago Laryngological and Otological Society, presiding.

The program consisted of a Symposium on "Inflammations of the Brain and the eninges of Oto-Rhinologic Origin."

DR. JAMES P. SIMONDS, (by invitation) in speaking of the *Pathology* said that there were four inflammatory processes occurring inside the cranium which result frequently from inflammatory processes beginning in the middle ear or sinuses of the nose: Thrombophlebitis of the dural sinuses, extradural abscesses, meningitis and brain abscesses, and discussed each of these complications.

DR. JULIUS GRINKER, speaking on the *General Considerations* divided them into the following subheads: I. Meningitis; II. Infectious Sinus Thrombosis; III. Brain Abscess, and discussed the *Differential Diagnosis.*

In his opinion otitic or rhinologic meningitis can be definitely differentiated from other forms of meningitis by complete examination of the spinal fluid, although there are conditions resembling true meningitis, such as *meningism* and *meningitis sympathica* which may cause some diagnostic difficulties. Meningism is a condition in which there are meningeal symptoms quite as acute as in true meningitis, but the spinal fluid is only increased in amount and shows no pathology. The patient usually recovers after a single spinal puncture. In meningitis sympathica there are meningeal symptoms but the spinal fluid is perfectly sterile, though there is an increase in pressure up to 400 mm.; there is also an increase in albumen and polynuclear cell-content. As this type of disease occurs in connection with brain abscess, with or without mastoiditis or lateral sinus disease, it may help positively in the diagnosis of brain abscess and negatively in excluding otitis meningitis.

The following differential points between *meningitis* and *brain abscess* were given:

In abscess the temperature is low or subnormal; not so in meningitis.

The pulse is slow in abscess; may be accelerated in meningitis.

A Kernig sign is unusual in abscess, unless the abscess has broken into the meninges and caused meningitis.

A Babinski sign may occur in abscess, is unusual in meningitis and when present is bilateral.

Optic nerve changes are more common in abscess than in meningitis.

Focal signs, usually present in abscess, may not be present in meningitis.

The spinal fluid may be normal in abscess, but pressure may be increased and the fluid may be turbid because of increased cellular content, usually polynuclear.

The abscess course is like that of brain tumor, while meningitis is more turbulent.

DR. HUGH T. PATRICK, in discussion the *Focal Signs and Symptoms,* confined his remarks to abscess as the focal signs of both septic and serous meningitis are so uncertain Focal signs of abscess of otorhinologic origin are the same as those of abscess of any other origin and the focal signs of abscess are practically the same as those of any other pathologic process.

In locating a brain abscess focal signs should take precedence over the locus of a known source of infection. Frontal sinus or ethmoid disease generally causes frontal lobe abscess but if the neurological signs point to the temporosphenoidal lobe the abscess should be sought there. Abscess of otitic origin is nearly always in the temporal lobe or cerebellum but if focal signs point to the Rolandic region, in all probability the abscess is there. Focal signs of frontal abscess frequently are absent and not very often conclusive. If the lesion extends caudalwards far enough to reach the prerolandic region, motor symptoms and perhaps sensory symptoms appear and on the left side

motor aphasia or agraphia. Focal fits are very rare and general convulsions unusual. Focal signs of abscess in the temporal lope relate to the visual fields and language. Focal signs of cerebellar abscess may be entirely lacking. Sometime they are obstrusive and sometimes only slight but most illuminating. Cerebellar ataxia is the most valuable. Vertigo is important, and in determining whether it is of cerebellar or vestibular origin the Bárány tests may be very useful. An abscess located in the pons or medulla is an extreme rarity but the focal signs would be those of any other lesion in this locality.

As an abscess from nose or ear infection may be located in any part of the encephalon, *all* the localizing signs of brain lesions should be considered in any given case.

DR. GEORGE SUKER (by invitation), in summing up the *Ocular Findings* said:

There are five points with which to evaluate the fundus findings (to which his remarks were limited) in any intracranial complication, whether abscess, tumor, meningitis, injury, gunshot wound or anything else:

(1) Their absence does not indicate absence of intracranial lesions.

(2) The fundus changes do not indicate the character or location of the lesion.

(3) The fundus changes have no bearing on the longevity of the patient.

(4) The fundus changes in the absence of cerebral manifestations are of great diagnostic value in suspected intracranial complications.

(5) Fundus changes can appear in any type of intracranial disease.

DR. HARRY A. SINGER (by invitation) spoke of the *Spinal Fluid Changes* and expressed the opinion that where the prognosis and course of treatment are guided by or are dependent upon the type and extent of the meningitis present the spinal fluid findings may be of value. From a therapeutic and prognostic standpoint it is quite important to decide whether one is dealing with a case of *circumscribed* meningitis or one in which the inflammation is *diffuse,* inasmuch as it is difficult to tell when the process is serous and when suppurative. Since so many cases of diffuse meningitis are associated with negative smears and cultures while not infrequently a case of circumscribed meningitis yields organisms, the problem would hardly be satisfactorily settled by merely a bacteriological examination. For this reason it was deemed advisable to study the cell count as well in these cases of otitic meningitis to see how much significance might be attached to this finding, and to determine the limits below which a meningitis can be considered localized and above which it is diffuse. Since cases of brain abscess are frequently associated with meningitis and it is this type of intracranial otitis complication which is most perplexing this type was chosen for study. In reviewing the brain abscess histories of the Cook County Hospital for the past five years they were able to find but ten records which fulfilled the requirements.

In ten cases of otitic brain abscess in which the signs and symptoms of meningeal irritation appeared, but in which the subsequent clinical course or postmortem findings indicated that the meningitis was localized there was an average cell count of 2,200; the lowest being 60, the highest 9,000. Two cases gave a count under 100; four between 100 and 1,000 and four between 1,000 and 10,000. In the three cases in which diffuse meningitis followed, as corroborated by postmortem findings, the counts were in each case 21,000, 54,000 and 56,000.

The striking feature in the brief survey was that counts of from 3,000 to 9,000 may be associated with but a circumscribed meningitis. It appeared that other things being equal, such as the virulence of the organism and the resistance of the host, etc., the cell count is a rough index to the extent of the meningeal involvement and should be taken into consideration along with the bacteriological findings, in the interpretation of laboratory reports on spinal fluids.

DR. WELLS P. EAGLETON, Newark, N. J. (by invitation) took up the *Operative Treatment* and expressed the belief that the treatment of meningitis and suppurative brain conditions has not kept pace with the advances in non-suppurative conditions.

He stressed the necessity for the development in every large hospital and in every eye and ear institution of a department of head surgery, this department to consist of a chief with a good surgical understanding and three assistants, and to have at its disposal the first call upon an operating room, a trained nurse, a technician and a laboratory man. He believed that every patient entering the hospital with a running ear and certain vague neurological symptoms should be subjugated to a complete neurological investigation before a simple mastoid operation is done. This neurological examination with a *complete* history he thought would diagnose a majority of brain abscesses very early and the surgeon should be competent to conduct such an examination. Operation should be performed as soon as all data are obtainable and every technical procedure that may be encountered during the operation has been provided for, and then *immediately.*

An x-ray picture should be taken of every suspected brain abscess. Experience has shown that a very large percentage of abscesses of the brain accompanied by ear disturbances are also accompanied by cloudiness in one or more nasal sinuses. If lumbar puncture is performed it should be done very carefully, and one should be prepared—particularly if the patient begins to breath badly—to go ahead with the operative procedure.

In an abscess of the temporosphenoidal lobe one should operate by a large flap so that no abscess may escape notice. A wide exposure of the cerebellum is necessary if one is to find the abscess in the different parts of the cerebellum in which it occurs.

In a recent case of cavernous sinus thrombosis, the infection coming from in front from an invasion of

the ethmoid cells, he tied the common carotid before eviserating the orbit. There was practically no hemorrhage. They removed the wing of the sphenoid, opened the cavernous sinus from in front, passed a probe back in it as far as the petrous portion of the temporal and the child recovered. In the next case in which the cavernous sinus was infected from the petrosals, the infection coming in from behind, he did the same thing and obtained the same result. The explanation of these startling recoveries he thought was simple: thrombosis, whether it is a cavernous sinus thrombosis or a thrombosis in the leg, is made worse by movement. In cavernous sinus thrombosis there is infection inside one of the great nevous trunks and inside of it the internal carotid artery is pounding away and keeping the thrombotic process going, but if the common carotid is tied it is put at rest.

In referring to meningitis Dr. Eagleton called attention to the fact that at the beginning of the process suppurative meningitis is localized and does not involve the whole cerebrospinal circulatory system. If this localized collection of fluid is evacuated one lets out a collection of fluid which is highly toxic and which contains microorganisms (sometimes with a low cell count in the lumbar region as low as 48 and sterile) the case may recover, provided the fluid is replaced with a simple solution that contains calcium salts at the temperature of the body. In the last two years he has succeeded in getting a few cases well that he was convinced would not have recovered otherwise.

DISCUSSION

DR. JOSEPH BECK said he had always profited by the work Dr. Eagleton had done. His own results had been very disappointing in work on the brain, and in meningitis he had no good results to report. He thought Dr. Eagleton's treatment of meningitis was good and congratulated him on his work in this field.

Dr. Beck called attention to the value of the Crowe-Beck sign in sinus thrombosis. He thought this should be tried even if it did not prove positive in every instance. The symptom is elicited by pressing the region of the internal jugular vein on the affected side, or having someone else press it, while one examines the interior of the eye. When this is done one can see the distension of the veins in the fundus of the eye as well as on the external temporal side.

DR. G. B. HASSIN thought the most interesting phase of the brain abscess problem is the formation of a connective tissue capsule around the abscess. Histologic studies of a capsule shows that it contains three distinct layers. The one adjacent to the abscess is made up of fibrous tissue containing few, if any, blood vessels. The layer bordering on the brain substance also contains fully developed collagen connective tissue fibers, but it is distinctly vascularized, while the middle layer principally consists of an enormous amount of hematogenous elements (lumphocytes, plasma cells, polyblasts) and fibroblasts (young connective tissue cells), scattered among numerous capillaries. By brilliant experiemental work Maximow has demonstrated that young connective tissue grows from hematogenous elements, principally polyblasts, considered by him modified lymphocytes. The histologic pictures of the youngest, the middle, layer in Dr. Hassin's cases was so similar to those of Maximow that he felt justified in maintaining that the brain abscess capsule grows from the hematogenous elements.

DR. C. F. YERGER said he had recently had some experience in the diagnosis of two cases of temporosphenoidal lobe abscess, in which the diagnosis was made on the finding of visual aphasia.

Referring to the cell count, Dr. Yerger thought it made a great deal of difference at what time the puncture was made; if made at the beginning of the localizing or protective reaction there would be only a relative increase of cells, while if made at a later stage, after the inflammatory reaction had been greatly increased, there would be a proportionately greater increase in cells, while in the terminal stage of diffuse suppurative leptomeningitis reaches the maximum. In one case with the onset of a diffuse meningitis the count rose from less then 2,000 to 56,000 cells and in another from less than 1,000 to 20,000 cells. He had seen the cell count reach as high as 250 in a case of brain tumor, but the cells were of the lymphocytic variety; whereas, in sympathetic or septic meningitis, while there is a pleocytosis it is of the polymorphonuclear variety.

DR. J. HOLINGER asked Dr. Eagleton in what percentage of his cases of meningitis or brain abscess he found the Babinski and Kernig signs. He stated that drainage of the subarachnoidal space in several cases of beginning meningitis had given him good results, and thought Dr. Eagleton's explanation of those results seemed plausible.

DR. GEORGE W. BOOT reported a very peculiar symptom which he had seen in one patient with suppuration of the frontal sinus. So far as he knew this patient did not have a frontal lobe abscess but an empyema of the right frontal sinus. When he was requested to sign the operation permit this patient turned the blank upside down and insisted that he always wrote his name upside down. Dr. Boot then held the paper right side up and the patient wrote it backward as well as upside down. It was not mirror writing. A week later he tried to write his name this way but could not do so.

In Dr. Boot's experience the most significant symptom of a left temporasphenoidal abscess has been disturbance of the center for the memory of names. In the localization of a cerebellar abscess he has found disturbances in past pointing of the utmost value.

Referring to the number of cells in the cerebrospinal fluid, Dr. Boot said that he had one case of temperosphenoidal abscess recover who had 6,250 cells, and another who had 16,300, so he considered the differential diagnosis between brain abscess and meningitis by means of the cell count very difficult.

Dr. Boot thought the new procedure Dr. Eagleton had outlined for cavernous sinus thrombosis sounded reasonable.

DR. HUGH T. PATRICK called attention to the fact that visual aphasia is a much rarer symptom of temporal lobe abscess than the auditory aphasia, because the center for visual speech is much higher up and further back, whereas the center for auditory speech is in the temporal lobe itself. He believed the necessity for a thorough neurological examination could not be stressed too much.

Dr. Patrick expressed the opinion that the needles customarily used in lumbar puncture are much too large. They should never exceed 1 mm. in diameter and 0.8 mm. is just as good. The dura is not very elastic and the needle ordinarily used makes a hole through which the fluid continues to flow for some time and it is this escape of fluid which makes the trouble rather than the small amount which is removed for examination. If the needle is small and only a small amount of fluid is withdrawn the bad effects of puncture, even in brain tumor, will be much less frequent.

DR. WELLS P. EAGLETON (in closing) said he thought the nomenclature on meningitis should be revised, so far as symptoms are concerned. The textbooks say there must be a stiff neck, yet there is not a stiff neck or a Kernig sign until the base is involved.

DR. HARRY A. SINGER said that in those cases of meningitis under observation in the Cook County Hospital during the past five years in which the patient either recovered or at postmortem showed but a localized meningitis, the highest count was below 10,000. The 16,000 count obtained in the case of meningitis with recovery, which Dr. Boot cited, he

believed to represent almost the upper cytological limit in cases of *circumscribed meningitis.*

DE KALB COUNTY

Dec. 30, 1924, the DeKalb County Medical Society were the guests of Rev. J. A. Solon at St. Mary's Rectory, DeKalb, Ill. Twenty-one were present.

Following a bountiful dinner at 6:30 p. m., several vocal selections were rendered by St. Mary's Boys.

After being called to order by President James S. Rankin, a motion was unanimously carried that the county society pay for a 1925 subscription to the Hygeia Magazine for each of the twelve high schools in the county.

Moved and seconded that the use of the Hygeia Magazine in the schools be commended and that a committee of three be appointed by the president to promote the subscription of Hygeia throughout the county. Carried. Dr. Roy M. Wheeler of Sycamore, Ill., was unanimously elected to membership in the society.

Judge Wm. I. Pond explained to us that bills for services in "Last Illness" had been moved from sixth to third class in the settling up of estates. The importance of this change comes where estates are insolvent.

Dr. John W. Ovitz reported a case of Pneumococcic Cerebro-Spinal Meningitis with Recovery by Use of Pneumococcic Antibody Solutions.

Dr. Geo. H. Joost reported a case of Traumatic Enlargement of the Left Ilium with Recovery.

The following officers were elected for 1925: President, Geo. W. Nesbitt, Sycamore; vice-president, S. L. Anderson, DeKalb; secretary-treasurer, Clifford E. Smith, DaKalb; censor for three years, Louise L. Culver, Sandwich.

A rising vote of thanks was given Rev. J. A. Solon for his royal entertainment.

January 29, 1925, The DeKalb County Medical Society met at the Sycamore City Hospital. Dinner was served at 12:45 P. M. Dr. Marvea D. Brown of DeKalb, was unanimously elected into membership. Dr. John A. Badgley of DeKalb, having honorably practiced medicine in DeKalb County for forty-five years, was made an Honorary Life Member. Dr. Badgley told how in making his calls in the early days, as his team slowly waded through the mud, he watched the trains pass swiftly and smoothly by and wished he had a similar method of making his calls. Dr. Badgley rejoices in having enjoyed good health and having lived to see his dream realized in the making of his calls by auto over cement roads.

Dr. R. G. Dakin has had five cases of malaria in DeKalb County and the Anopheles mosquito is sometimes found in stagnant pools in this district.

Dr. L. B. Bagnall gave a very interesting paper on Diathermy and ably led the discussion on this subject.

Dr. C. D. Carter reported an unusual case of Lethargic Encephalitis. The case has been latent and death followed five days after tonsillectomy.

A rising vote of thanks was given Sycamore hospital for their royal entertainment.

CLIFFORD E. SMITH, Secy.

VERMILION COUNTY

Vermilion County Medical Society met in regular monthly meeting Dec. 2, 1924. Following dinner, the Scientific Session followed. There were about 60 present. Dr. E. G. C. Williams, retiring president, delivered an address on the subject "A Total Failure." His theme was that total failures would occur in every man's practice, but that instead of being discouraged and throwing up our hands helplessly, it should spur us to greater efforts of research and investigation to the end that the next time we met that condition we would come off victors.

Dr. L. C. Taylor, president of the Illinois Medical Society, delivered an instructive address on the subject "Medical Legislation in Illinois," which showed that while much had been accomplished, much remained still to be done

Dr. Harry E. Koons, secretary-treasurer, read his reports, the latter showing a good balance on hand, while the secretary's report showed the society with 103 members and 100 per cent paid and in the secretary's hands April 7th. This is believed to be a record for this state. A great many back dues were collected to accomplish this, some as much as four years in arrears.

The new officers are as follows: Jos. C. Moore, Hoopeston, president; F. L. Hartsook, Danville, vice-president; Harry E. Koons, Danville, secretary-treasurer; C. E. Wilkinson, Danville, delegate.

Harry E. Koons,
Secretary.

Marriages

SEYMOUR JEROME COHEN, Chicago, to Miss Sylvia Kaplan of Macon, Ga., at Chattanooga, Tenn., Dec. 3, 1924.

GEORGE G. HARVEY to Miss Ruth Almaretta Whipple, both of Springfield, Ill., recently.

MORRIS WILLIAM LEV to Miss Adele Iglowitz, both of Chicago, Nov. 27, 1924.

Personals

Dr. Lewis W. Bremerman, Chicago, addressed the Academy of Medicine of Muncie recently on "Ureteral Calculi."

Dr. Hugh T. Patrick addressed the Tippecanoe

County Medical Society, Lafayette, Ind., January 7, on "Differential Diagnosis of Functional and Organic Diseases of the Nervous System."

Dr. John W. Seids has been elected president of the Moline Lutheran Hospital staff for 1925; Dr. Frank N. Davenport, vice-president; Dr. Clifford C. Ellis, secretary.

Dr. Lewis C. Taylor, Springfield, president, Illinois State Medical Society, addressed the Madison County Medical Society, Edwardsville, January 2, on "Medical Legislation."

Dr. William M. Marriott, superintendent, Children's Hospital, Washington University, St. Louis, lectured under the auspices of the St. Clair County Medical Society at the Elks Club, East St. Louis, January 8, on "Infant Feeding."

Dr. Bartlett C. Shackford, for several years the head of the pathologic laboratory of the Decatur and Macon County Hospital, tendered his resignation, effective January 1, to become head of a laboratory in Los Angeles.

Dr. Dean D. Lewis addressed the Sioux Valley Medical Association, Sioux City, Iowa, January 20-21, on "Infections"; Dr. Isaac A. Abt, on the "Treatment of Diphtheria and Scarlet Fever," and Dr. Albert H. Andrews on "Fifth Nerve Manifestations."

At the January 9 meeting of the Chicago Roentgen Society, Dr. Hollis E. Potter spoke on "A Present Day Study of the Duodenum," and Dr. Harold Swanberg, Quincy, on "A Radiologic Educational Program for the General Practitioner."

John W. Alvord has been chosen head of the advisory board to the county health department, and Dr. Samuel S. Winner, secretary. The board comprises also Drs. Herman Bundesen, William A. Evans, Ethan A. Gray, Otto S. Pavick, Herbert L. Wright and Florian G. Ostrowski.

Dr. and Mrs. A. M. Earel, of Hoopeston, sailed on S. S. California last month for a trip around the world.

Dr. D. A. Morgan, who has practiced medicine at Nilwood for the past twenty years, has accepted a position on the Medical Staff of the Central Hospital at Jacksonville, Illinois.

News Notes

—It has been announced that a $350,000 addition to the Methodist Hospital, Peoria, will be constructed in the spring.

—A banquet was given January 16 by the Physicians' Fellowship Club at the Logan Square Masonic Temple in honor of Drs. Jeremiah H. Walsh, a trustee of the American Medical Association, and president of the Chicago Medical Society, and Dr. Jacob C. Krafft, president-elect, Illinois State Medical Society.

—It is reported that Milo M. Grimes, chiropractor, Rock Island, who was arrested last April charged with violating the state medical law for failing to report a communicable disease, was found not guilty by a jury, Dec. 17, 1924, he having pleaded ignorance of the fact that William Miller, his patient, had diphtheria.

—The General Education Board has made a conditional gift of $2,000,000 toward the University of Chicago's endowment fund, the condition being that the university raise $4,000,000 additional for the same purpose. The first objective of the university for 1925 in its development program is to raise $6,500,000 for the endowment of instruction and research; the second, to raise $11,000,000 for new buildings.

—The chairman of the board of Wesley Hospital announced, January 19, that the new Wesley Memorial Hospital will be erected on a site recently purchased at Superior Street and Fairbanks Court. Northwestern University will lease land adjoining the McKinlock Campus for one of the hospital buildings, which will be used for clinical instruction. This building will have a capacity of 400 beds, and the total capacity of the new hospital will be 1,200 beds.

—St. Luke's, Mercy, Wesley Memorial and the Chicago Memorial hospitals have installed "ticker" call boxes which provide them with two minute taxicab service. A signal is instantly recorded on a tape in the nearest agent's office, from which a taxicab is promptly dispatched. This service is identical with that used by the Western Union and Postal Telegraph companies to summon messengers. Chicago is the first city te use these call boxes in hospitals.

—The Committee on Evening Courses for Chemists of the Chicago Section of the American Chemical Society has arranged for a series of lectures on biologic chemistry, which will start early in January and continue one each week for twelve weeks. This is the only course to be presented in the winter term. Prof. Martin E. Hanke, who is associated with the department of physiologic chemistry and pharmacology, University of Chicago, will give the lectures. Those interested in enrolling are requested to communicate at once with Arthur Guillaudeu, 6536 South Campbell Avenue.

—The Council on Medical Education and Hospitals, American Medical Association, has just compiled data on hospitals in Chicago. The total number in the city is ninety-nine, of which sixty-seven are general hospitals; seven, maternity; four, nervous and mental; four, convalescent; four, industrial; three, isolation; three, tuberculosis; and one each of the following: pediatric; orthopedic; eye, ear, nose and throat; urologic; alcoholic and drug; incurables, and U. S. Marine. The total number of beds in these hospitals is 14,645, and the average number of patients in them, 10,398, making the percentage of beds occupied 71. The hospitals vary in size from 2,500 beds (Cook County Hospital) to seven beds.

—The following officers of Will County Medical Society were elected for 1925: President, Bert G. Wilcox; vice-president, John W. Krohn; secretary, G. H. Woodruff; treasurer, Roy B. Leach; delegate, H. W. Woodruff; alternate delegate, A. J. Lennon; medico-legal representative, W. R. Fletcher. Dr. Bloomfield was elected to the Board of Censors.

—Douglas County Medical Society held its annual meeting Jan. 15, 1925, for the election of officers of the society for 1925: President, H. I. Conn, Newman; vice-president, C. O. Norris, Arthur; secretary-treasurer, John O. Cletcher, Tuscola.

—Dr. G. B. Dudley, Charleston, 8th district councilman, came before the Douglas County Medical Society Jan. 15, 1925, and gave an interesting discussion on "Work Done by the Council the Past Year."

—The Chicago Dental Society held its sixty-first annual meeting and clinic at the Drake Hotel, January 21-23, which was attended by dentists from all parts of the United States and Canada.

—Practically the entire population of Greenville, and persons who visited there (nearly 3,000 in all) are "down with dysentery," according to the state department of health. The outbreak was due to a faulty sewer pipe which allowed sewage to seep into the tile water main.

—Dr. William Allen Pusey, President, American Medical Association, addressed the Chicago Dermatological Society at its twenty-fifth anniversary meeting, January 21. Dr. Pusey, a charter member of the society, was the guest of honor; other charter members present were Dr. David Lieberthal and Dr. Lucius C. Pardee. Dr. James H. Mitchell, president of the society, read a paper on "The Institutionalization of the Practice of Medicine."

—The board of trustees of Northwestern University, January 27, appointed Dr. Irving S. Cutter, Omaha, dean of the medical school. Dr. Cutter has since 1913 been professor of biochemistry and director of laboratories, and, since 1915, dean of the medical school at the University of Nebraska. He was editor of the *Nebraska State Medical Journal*, 1916-1918, a captain in the medical Corps, U. S. Army, 1918-1919, and is now a lieutenant-colonel in the medical officers reserve corps. Dr. Cutter will take up his work at Northwestern in June or July.

—The Chicago Council of Medical Women, a comparatively new group of physicians assembled for the purpose of collating their professional experience, is showing progress. Dr. Bertha Van Hoosen's admirable symposium for the year on Hemorrhage was continued in the January meeting giving particular attention to surgery. Dr. Alice Conklin presented surgical risks in diabetes, jaundice, hemophilia and disturbances of normal blood pressure. Dr. Lena K. Sadler made an excellent presentation of hemorrhage during operation and a summary of all methods of hemostasis. (A surgeon who ties a "granny knot" would not be able to hold up his head in this assembly.) The president of the Council, Dr. Anna Blount, reviewed postoperative hemorrhage with clinical illustrations. The discussion was well rounded and made emphatic by

Dr. Van Hoosen by such telling phrases as "regulation of coagulation time," "cooperative automaton," "camel of a colon," all of which will be read with interest in the formal publication of papers and discussions.

Deaths

NORMAN BRIDGE, emeritus professor of medicine, Ruch Medical College, Chicago, died in Los Angeles, January 10. Born in Vermont in 1844, Dr. Bridge entered the University of Michigan Medical School, Ann Arbor, in 1866, graduating from the Chicago Medical College in 1868 and from Rush Medical College in 1878. Almost immediately after graduation, he became a member of the faculty at the Chicago Medical College, and a few years later entered the faculty of Rush, with which he was connected until the time of his death. In 1872 he was one of the publishers of the first volume of the Chicago Medical Register and Directory, and later became an associate editor of the *Chicago Medical Journal and Examiner*. Dr. Bridge was instrumental in building the Cook County Hospital and later the Presbyterian Hospital; he was a member of the Chicago Board of Education, 1881-1884; president, 1882-1883, and a member of the board of election commissioners from 1886 to 1890. He gave up a large practice in Chicago in 1892 on account of poor health and moved to Los Angeles. Here he held various public offices, among them membership on the board of freeholders which framed the new charter for Pasadena. He was one of the pioneers in tuberculosis work in southern California, and the author of "Lectures on Tuberculosis," "The Penalties of Taste," "The Marching Years" and many essays contributed to medical journals and books. Dr. Bridge was honored by many colleges and scientific societies, and was a Fellow A. M. A.; a member of the Illinois State Medical Society, the American Climatological and Clinical Association, the Association of American Physicians and the Chicago Institute of Medicine. He founded and endowed the Norman Bridge Laboratory of the California Institute of Technology, and made large gifts to Rush Medical College and other educational and charitable institutions.

ALEXANDER LESLIE BLACKWOOD, Chicago; Hahnemann Medical College and Hospital, Chicago, 1888; a Fellow A. M. A.; member of the American College of Physicians; senior professor of materia medica and clinical medicine at his alma mater, 1899-1922; formerly vice-president of the board of education; author of "Diseases of the Heart" and "A Manual of Materia Medica, Therapeutics and Pharmacology"; aged 62; died, Dec. 30, 1924, at the South Chicago Hospital, from the effects of a carbuncle and diabetes mellitus.

THOMAS MICHAEL BUCKLEY, Chicago; Long Island College Hospital, Brooklyn, 1891 a Fellow A. M. A.; aged 72; died suddenly, Dec. 29, 1924, of heart disease.

JOSEPH PETTEE COBB, Chicago; Hahnemann Medical College, Chicago, 1883; adjunct professor, 1889-1893, professor of physiology, embryology and histology, 1893-1898, senior professor of pediatrics since 1898, president and formerly dean at his alma mater; on the staff of the Chicago Memorial Hospital (formerly the Hahnemann Hospital); at one time president of the American Institute of Homeopathy; aged 67; died, Dec. 23, 1924, of uremia, following nephritis and heart disease.

THOMAS WALTER CURRY, Streator, Ill.; Northwestern University Medical School, Chicago, 1898; a Fellow A. M. A.; aged 53; died Dec. 13, 1924, at London, England.

WENCESLAUS JOHN DVORAK, Chicago; Rush Medical College, Chicago, 1896; a Fellow A. M. A.; aged 61; died, January 1, of carcinoma of the bladder.

ALEXANDER GRAY, Savanna, Ill.; Rush Medical College, Chicago, 1899; a Fellow A. M. A.; aged 56; died suddenly, Dec. 29, 1924, of heart disease.

ROBERT HENRY KEYES, Hopedale, Ill.; College of Physicians and Surgeons, Keokuk, 1883; aged 62; died Dec. 11, 1924, of cerebral hemorrhage.

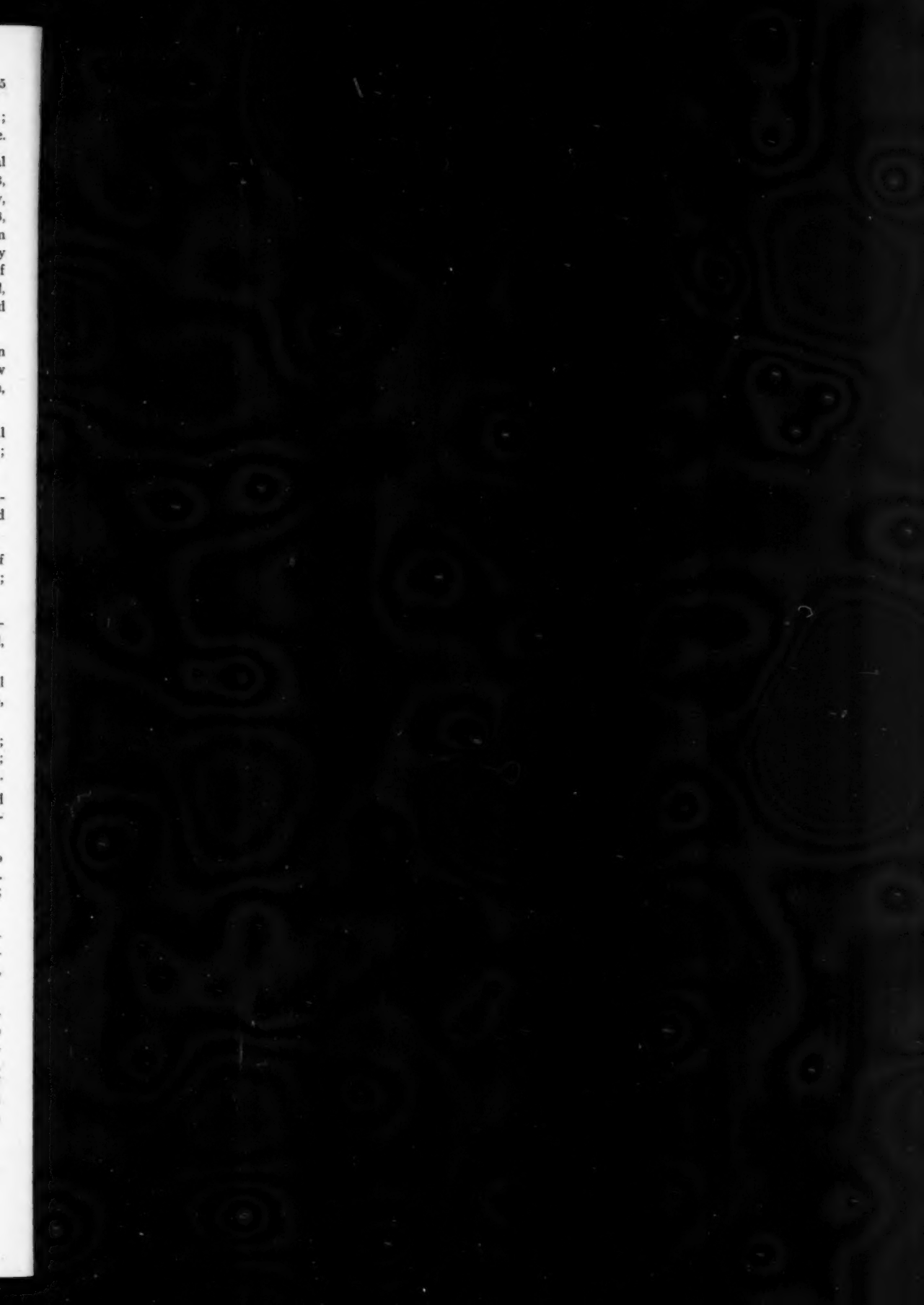
ROSE E. MCCAGHNA, Chicago; University of Michigan Medical School, Ann Arbor, 1890; aged 67; died, Dec. 12, 1924, of heart disease.

JAMES M. MILLER, Techny, Ill.; Jefferson Medical College of Philadelphia, 1868; aged 81; died, Sept. 15, 1924, of pernicious anemia.

HOWARD MITCHELL PANKEY, Shawneetown, Ill.; Loyola University School of Medcine, Chicago, 1922; aged 28; died, Dec. 8, 1924, at Denver, of tuberculosis.

ELIJAH M. ROTRAMEL, West Frankfort, Ill. (licensed Illinois, 1878); aged 81; died, Dec. 27, 1924, of carcinoma of the stomach.

DARWIN DELOS CULVER, Aurora, Ill.; Chicago Homeopathic Medical College, 1894; a Fellow A. M. A.; president of the Kane County Medical Society; aged 56; died, January 11, of heart disease.

JUDSON T. WEBSTER, Atlanta, Ill.; Hahnemann Medical College and Hospital, Chicago, 1889; Harvey Medical College, Chicago, 1896; aged 73; died, January 10, of cerebral hemorrhage.

GRACE LYNDE MEIGS CROWDER, Chicago; Rush Medical College, Chicago, 1908; member of the Chicago Pediatric Society; served as director, Division of Hygiene, Children's Bureau, U. S. Department of Labor, Washington, D. C., 1914-1918; formerly member of the Commission on Infant Welfare, General Medical Board, Council of National Defense; author of works on child welfare; aged 43; died, January 20, of injuries received in jumping from the window of a hospital while suffering from ill health.